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Exhibit 1

Section 2 of the EPA-Approved RI Update Memorandum (December 2004): Conceptual Site Model

Supplemental Remedial Investigation
and Supplemental Feasibility Study
for the FMC Plant Operable Unit

REMEDIAL INVESTIGATION UPDATE MEMORANDUM FOR THE FMC PLANT OPERABLE UNIT

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Section 2
Conceptual Site Model

A conceptual site model (CSM) for potential human exposure to contaminants from the Eastern Michaud Flats Site was presented in Sections 1.3 of the Baseline Human Health Risk Assessment (BHHRA) (Ecology & Environment 1996) and in Section 6.1 of the EMF Site Record of Decision (ROD) (EPA 1998). The EMF Site CSM identified current and/or potential future exposure pathways through which current and potential future site workers (FMC and Simplot employees and contractors) and nearby residents could be exposed to site-related contamination. The CSM for the EMF Site is reproduced in Figure 2-1. The FMC Plant OU consists of the Pocatello plant site and the FMC properties north of the plant site shown in Figure 2-2.

The FMC and Simplot facilities were operational when EPA selected a remedy for the EMF Site in 1998. The ROD assumed that the most likely future land use at each facility was continued industrial use, with each company operating its facility and controlling exposures to hazardous substances, pollutants, and contaminants in accordance with environmental requirements applicable to ongoing manufacturing operations. However, the ROD also evaluated the potential exposure of a hypothetical future site worker to assess the risks that the plant area could pose in the future, if it were to be converted to a different commercial or industrial use under different management.

FMC ceased production of elemental phosphorus from phosphate ore at the facility in December 2001. FMC has initiated activities to decommission the facility and is participating in the Idaho Optimization Initiative (IOI). The IOI was created by Governor Kempthorne to form a committee of local governmental representatives including the Shoshone-Bannock Tribes and interested citizens dedicated to identify new commercial or industrial redevelopment uses for the site. Consideration has been given to uses in the following areas: intermodal distribution / warehousing, high tech design / assembly, power generation, biobased products and/or bioenergy, and broad-based industrial parks. The site's assets, such as existing rail spurs, roads, and water and sewage services, and location, such as proximity to high-voltage power distribution lines, Interstate 86, Union Pacific Railroad tracks, Pocatello Regional Airport, and interstate gas pipeline, are ideal for industrial reuse.

However, redevelopment of some areas within the FMC Plant OU is constrained by several factors:

- As required under RCRA, FMC has recorded deed restrictions that prohibit intrusion into the cover, and within a 10-foot area beyond the cover, of two hazardous waste management units that have been closed in accordance with RCRA Closure Plans. FMC will record similar deed restrictions for an additional group of hazardous waste management units when the final cap is placed on these units in 2004 and 2005. FMC will also record similar deed restrictions at the closed Calciner Scrubber Wastewater Ponds, which are being remediated under an Administrative Order with the Idaho Department of Environmental Quality (IDEQ). Consequently, these capped areas would not be available as sites for construction of new facilities.
- The EMF ROD selected capping as the preferred remedy for the "Old Phossy Waste Ponds" and the "Old Calciner Pond Solids Storage Area" of the FMC Plant OU to

reduce the potential for precipitation infiltration and exposure to contaminated soils and waste materials. The EMF ROD also required FMC to extend the lining of the Railroad Swale at least 830 feet or replace it. Consequently, these capped areas also would not be available as sites for construction of new facilities. FMC anticipates land use restrictions to prevent intrusion through any cap/liner at the Railroad Swale will be implemented if capping is the selected remedy for RU 22c. These restrictions are appropriate and consistent with FMC's remediation vision for RU 22c.

- The EMF ROD selected groundwater monitoring and contingent groundwater extraction for hydraulic control to address impacted groundwater within FMC properties. The EMF ROD requires FMC to implement land use restrictions that a) prevent ingestion of groundwater containing site-related constituents above MCLs or risk-based concentrations, b) prevent future residential use of the FMC plant area, and c) require that future office buildings be constructed using radon control methods specified in an EPA guidance document titled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" (EPA 1994a). Consequently, redevelopment planning for the FMC Plant OU assumes that these land and groundwater use restrictions will be applicable.

Figure 2-3 depicts areas within the FMC Plant OU that are subject to these land and groundwater use constraints. This figure also depicts additional areas of the FMC Plant OU that are subject to supplemental investigation under the SRI/SFS process. The resulting ROD Amendment for the FMC Plant OU may determine that additional areas should be subject to additional land use controls.

In light of the cessation of phosphate ore processing and the potential for site redevelopment within the constraints noted above, the CSM is herein updated to identify potential exposure pathways under both current conditions and potential future commercial/industrial use of the FMC Plant OU. The updated CSM describes potential sources of hazardous substances within the FMC Plant OU, potential release mechanisms from these sources, and potential pathways by which current and future receptors could be exposed to such releases. The updated CSM serves as a framework for developing the scope of a supplemental remedial investigation (SRI) and supplemental feasibility study (SFS) of remedial action alternatives for the FMC Plant OU.

Section 2.1 discusses regulatory guidance for developing a CSM. The operational history of each former working area is evaluated in Section 2.2 to determine if there are site-related constituents and potential pathways of exposure to these constituents that were not evaluated during the RI. Areas of the FMC facility listed in Table J-1 of FMC's RCRA Part B Permit Application (as amended September 2002) (FMC 2002a) have been reviewed to identify former working areas. This section also discusses changes in facility operations since development of the original CSM that affect the scope of the updated CSM.

The updated CSM is presented in Section 2.3. The updated CSM includes consideration of areas already evaluated during the EMF Site RI/FS and 1998 ROD, but focuses on former working areas of the plant that were excluded from the EMF Site RI/FS and June 1998 ROD.

2.1 Factors Influencing the Updated CSM

This section discusses EPA guidelines for developing a CSM (Section 2.1.1). It also describes land use controls for certain hazardous waste management units required under RCRA (Section 2.1.2), and land and groundwater use restrictions identified in the EMF Site Record of Decision (ROD).

The agency coordination committee (comprised of EPA, IDEQ, Tribal representatives) commented on an October 2003 draft schematic of the updated CSM. The comments concerned the identification of potential sources, release mechanisms, exposure media, and exposure pathways. Section 2.3 describes how each comment was addressed in preparing the updated CSM.

2.1.1 CSM Guidance

EPA guidance (EPA 2002) for developing a CSM for a site with an anticipated non-residential land use is summarized in Figures 2-4 through 2-7. EPA recommends that a CSM be described in schematic format, such as that shown in Figure 2-8.

EPA recommends that reasonably anticipated future land use be identified as the first step of the CSM development process. As noted earlier, State and local agencies are engaged under the IOI committee to identify potential future commercial or industrial land use for part(s) of the FMC Plant OU. As stated in Section 10.2.3 of the EMF Site Record of Decision (ROD) (Land Use Restrictions), *"FMC shall also implement legally enforceable land use controls that run with the land in the form of deed restrictions to eliminate the possibility for future residential use of the FMC Plant Area."* Consequently, the updated CSM will assume a future commercial and/or industrial land use for the FMC Plant OU.

EPA also recommends that a CSM for a commercial or industrial site focus on two types of worker receptors — Outdoor Workers and Indoor Workers — unless anticipated future site activities are expected to result in substantial exposures to members of the public and/or children visiting the site. It is unlikely that future site activities would result in substantial exposures to members of the public (as might occur if the site were redeveloped as a retail business area) and/or to children (as might occur is the site were redeveloped as a school or day-care facility). Consequently, the updated CSM will identify potential exposure pathways for outdoor and indoor workers.

EPA recommends that a CSM identify potential future site activities that may contribute to exposure. Examples of activities that might occur during potential industrial redevelopment of the FMC Plant OU would include construction activities, utility installation, outdoor maintenance work and landscaping, indoor activities (e.g. manufacturing operations and office work), and monitoring and maintenance activities associated with RCRA post-closure (CERCLA/IDEQ post-remedial action) care of closed (remediated) waste management units.

As noted in Figure 2-6a, EPA recognizes six generic potential exposure pathways through which commercial/industrial site indoor and/or outdoor workers might be exposed to contaminated surface and subsurface soils. EPA also identifies six generic exposure pathways through which construction workers might be exposed to contaminated surface and subsurface soils, as noted in Figure 2-6b. EPA recommends that site managers evaluate site conditions to determine if there are pertinent exposure pathways other than the six generic pathways. Section 2.2.4 discusses how these guidelines were addressed to identify potential exposure pathways in the updated CSM.

As noted in Figure 2-7, EPA indicates that in the absence of site-specific information to the contrary, site assessments should assume that an individual receptor will have random exposure to surface soils at both residential and non-residential sites. EPA recommends that site assessment sampling plans develop a reliable estimate of the arithmetic mean of constituent concentrations for surface soils within the area that the receptor could be exposed. EPA also recommends that the depth over which soils are sampled should reflect the type of exposures expected. Activities typical for non-residential site uses (e.g., landscaping and other outdoor maintenance activities) may result in direct contact exposure for certain receptors to contaminants in shallow subsurface soils at depths of up to two feet. If available evidence indicates that contaminated subsurface soils will be disturbed and brought to the surface (e.g., as the result of redevelopment activities), EPA recommends that site managers characterize subsurface contamination with a sufficient number of samples to develop a 95% upper confidence level (UCL95) value as a conservative estimate of the mean.

EPA also recommends that CSM development for all soil screening evaluations include the identification of ground water use. Section 10.2.3 (Land Use Restrictions) of the EMF Site ROD states *"FMC shall implement legally enforceable land use controls that will run with the land (i.e., deed restrictions, limited access, well restrictions and or well head protection) to prevent ingestion of ground water with COCs above MCLs or RBCs. These controls will remain in place as long as ground water exceeds MCLs or RBCs."* Consequently, the updated CSM will reflect that these land use controls remain in place to prevent the ingestion of contaminated groundwater within the FMC Plant OU in the manner indicated in the EMF Site ROD.

2.1.2 Guidance Specific to Landfills.

The February 2004 Scoping and Planning Memorandum for the Supplemental RI and Supplemental FS for the FMC OU (SPM) (FMC 2004) notes that the EPA guidance entitled *"Presumptive Remedy for CERCLA Municipal Landfill Sites"* (EPA, 1993) will be utilized as guidance for investigation and/or remedy selection at RUs 17 (Recyclable Material Landfill), 18 (Plant Landfill) and possibly, portions of 19 (Slag Pile with buried former plant landfill and other possible buried miscellaneous wastes/debris). The objective of this directive is to streamline the remedial investigation and assessment of remedial action objectives for municipal waste landfills based on the presumption of a containment remedy. Figure 2-9 presents relevant passages from this directive, including objectives, the components of the presumptive remedy, role of the conceptual site model, and characterization of potential contaminant release/transport mechanisms, affected media, receptors, and exposure pathways. The potential applicability of the EPA directive on updating the CSM is discussed further in Section 2.3.

2.1.3 One Cleanup Program Considerations

Recognizing that CERCLA remedial action and RCRA corrective action involve similar investigations and have similar objectives, EPA has established a policy to make these two programs equivalent. This policy, known as the One Cleanup Program Initiative, is further discussed in the SOW for the SRI/SFS for the FMC Plant OU.

The FMC facility contains hazardous waste management units (WMUs) regulated under the Resource Conservation and Recovery Act (RCRA) that are in the process of RCRA closure or post-closure. As of February 2004, FMC has certified completion of closure of five of the RCRA WMUs — Ponds 8S (WMU #7) and 9E (WMU #9); Wastewater Treatment Unit (WMU #12); Anderson Filter Media Wash Station (WMU #13); Drum Storage Unit (WMU #1) — in accordance with RCRA closure plans. FMC has completed the initial phase of closure activities at all the remaining RCRA WMUs in accordance with closure plans approved by EPA Region 10. FMC expects to certify completion of closure of Pond 15S (WMU #3), the Phase IV Ponds (WMU #8), Pond 16S (WMU #10), and Pond 8E (WMU #11) later in 2004. FMC anticipates certifying completion of closure of Pond 17 (WMU #14) and Pond 18 (WMU #15) by 2005. FMC submitted documentation to EPA that the 8S Recovery Process (WMU #4) was closed in 1993 in the manner described in the closure plan and requested EPA approval of the closure plan; FMC will certify closure of this unit following EPA approval of the closure plan. FMC will conduct RCRA closure at the Slag Pit Wastewater Collection Sump (WMU #5) after EPA has approved the closure plan for that unit. Post-closure activities at the Slag Pit Wastewater Collection Sump will be coordinated with CERCLA remediation of the slag pit area.

Certain RCRA less-than 90-day hazardous waste generator accumulation areas (GAAs) are in operation to support facility decommissioning and demolition activities. As required by the RCRA hazardous waste management standards, these GAAs are designed and operated to prevent releases and will be closed by waste removal and equipment decontamination. Potential releases from the GAAs are encompassed within the scope of the Supplemental RI/FS, but closure, including any necessary decontamination, will be addressed pursuant to RCRA requirements.

FMC signed a consent order with IDEQ on July 8, 2002 to implement remedial action for the calciner ponds (RU#14), located on State-jurisdiction land in the eastern portion of the FMC facility. A Remedial Action Plan for the calciner ponds was approved by IDEQ in December 2003 in accordance with the IDEQ consent order. As of February 2004, FMC has completed dewatering and installation of the initial fill and temporary cover at Calciner Ponds 1C, 3C, and 4C. Completion of the remedial action (capping) at the Calciner Ponds is scheduled to be completed by the end of the 2005 construction season. The timing of the final cap is dependent on meeting acceptable settlement rates for the initial fills at Ponds 1C, 3C, and 4C.

2.2 Evaluation of Former Working Areas

Section 2.2 presents an evaluation of former working areas within the FMC Plant OU to identify additional potential sources, release mechanisms, receptors, and exposure pathways. Former manufacturing process areas, feedstock and byproduct storage areas, and waste management areas of the FMC Plant OU are outlined in Figure 2-2 ["RU-1"] and listed in Table 2-1. These "former working areas" encompass all potential source areas that may have released hazardous substances within the FMC Plant OU. These former working areas were also clustered into preliminary Remediation Units (RU) in the SPM (FMC 2004).

Solid Waste Management Units (SWMUs) identified in FMC's current RCRA Part B Permit Application (as amended through September 2002) are cross-referenced with each preliminary Remediation Unit in Table 2-1. SWMUs are units from which releases of hazardous constituents that have the potential to be a threat to human health or the environment have occurred or have the potential to occur.

The operational histories of former working areas and related SWMUs are summarized in Appendix A. This appendix also summarizes findings from the EMF Site RI[1] and subsequent reports concerning the nature and extent of contamination associated with former working areas or SWMUs and other areas of the FMC Plant OU[2]. Further information on operational histories and previous investigation findings are presented in Section 3 of this RI Report Update. These operational histories and previous studies were reviewed to determine:

- Are there additional potential sources or further understanding of source characteristics or release mechanisms that should be reflected in the updated CSM? How do the issues reported by the public concerning former working areas[3] affect the identification of potential sources or influence the evaluation of site conditions?
- Are there new classes of potential receptors or potential exposure pathways that were not evaluated during the EMF Site RI or are there significant changes in the nature of potential exposure pathways? How should these receptors, pathways, or changes in pathway characteristics be addressed in the updated CSM?
- Are there site-related constituents that were not evaluated during the EMF Site RI? How should these constituents be addressed in the updated CSM?
- How should closures of RCRA waste management units, remediation of the Calciner Ponds, and decommissioning of manufacturing process units be reflected in the updated CSM?

The results of these evaluations are presented in the following sections.

2.2.1 Update: Potential Sources

This section identifies potential sources that were not described in the original conceptual site model for the EMF Site and changes in the characteristics of several potential sources that were included in the original CSM.

Residual Elemental Phosphorus (P4) from Former Spills and Process Leaks at P4 Production, Storage, and Handling Areas: A release of P4 to subsurface soils was detected in 1999 during excavation within the Furnace Building associated with installation of the Slag Ladling System. This release appeared to be attributable to leakage from the #3 Furnace P4 Sump. Subsequent review of notifications of spills and releases of process materials that

[1] The scope of the investigation included analysis of approximately 1,500 groundwater samples; potential source and soil samples from 200 locations; 3,600 air quality samples; 250 surface water and sediment samples; and aquatic and terrestrial ecology sampling. Groundwater flow was determined through quarterly measurements of groundwater elevations at over 100 wells. Characterization of groundwater flow was supplemented by a groundwater flow modeling study. An atmospheric dispersion modeling study was performed using emission inventories for 119 point, area, and line sources at the facilities (75 of which were within the FMC facility area, including emissions from the then-active Bannock Paving area).

[2] The information sources reviewed in Appendix A include: EMF Site Remedial Investigation Report; FMC's RCRA Part B Permit Application (FMC 2002a); FMC's 2/27/98 response to EPA's 1/22/98 CERCLA Section 104/RCRA Section 3007 information request (FMC 1998); FMC's 2/19/99 response to EPA's 10/23/98 and 1/12/99 information requests (FMC 1999); and FMC's 9/17/02 response to EPA's 7/8/02 RCRA Section 3008 information request (FMC 2002b).

[3] These issues are recorded in Section 3.2 of the SPM (FMC 2004).

contained, or may have contained P4 suggest that P4 may be present in subsurface soils beneath other parts of the Furnace Building - Phos Dock - Secondary Condenser area.

The presence of P4 in soils beneath the Furnace Building, the history of spills and releases of process materials containing, or potentially containing P4, and the potential for similar P4 releases to surrounding soils from other manufacturing process units related to P4 production, handling, and storage led FMC to designate the Furnace Building, Phos Dock,[4] Secondary Condenser Area as Area of Concern (AOC) #1 in its September 2001 amendment to Section J (Corrective Action) of its RCRA Part B Permit Application. AOC #1 corresponds to RU#1.

Consequently, residual P4 from former spills and process leaks at P4 production, storage, and handling areas is identified as an additional potential source in the updated CSM. SWMUs in RU#1 and other RUs at which P4 was produced, stored, or handled are listed in Table 2-2.

The CSM in the EMF ROD recognized that phossy water and precipitator slurry containing P4 were managed in ponds over the course of plant operations. RU#22a (RCRA Waste Management Units) and RU#22b (CERCLA Remedial Design / Remedial Action) include SWMUs (e.g., Pond 8S, SWMU 7) in which phossy water and precipitator slurry were managed.

Particulate Emission Reductions: Subsequent to publication of the ROD, EPA issued a Federal Implementation Plan (FIP) under the Clean Air Act that required reductions in particulate emissions from the FMC facility. Concurrently, FMC completed 13 Supplemental Environmental Projects (SEPs) during 1999-2001 pursuant to the FMC RCRA Consent Decree (entered July 13, 1999) that collectively reduced particulate emissions from on-going facility operations by approximately 80%. These emission controls met the reduction requirements established by the FIP. Moreover, emissions from these sources as well as other sources evaluated during the RI were subsequently eliminated upon cessation of elemental phosphorus manufacturing operations in December 2001. Consequently, FMC plant emissions associated with stacks and vents and operating areas are not identified as sources in the updated CSM. However, the updated CSM recognizes surface soils impacted by deposition from previous emissions from the FMC and J.R. Simplot facilities as a potential secondary source.

Elimination of Point-Source Discharge: FMC terminated the IWW discharge to the Portneuf River in August 2002 and, at FMC's request, EPA subsequently terminated the associated NPDES permit. This was the only point-source discharge associated with the FMC Plant OU. Consequently, the point-source discharge from the IWW Ditch is no longer identified as a potential source in the updated CSM for the FMC Plant OU. The IWW pond and ditch have been backfilled with silica in 2004. The sediments in IWW ditch and pond were left in place when these features were backfilled.

Carbon Monoxide Flare Pit: The CO flare pit was taken out of service after the Excess CO Combustor was installed. The pit was originally lined with silica, and the pit lining material was excavated prior to backfilling the pit.

Potential Buried Transformers at RU#12: As noted in Section 3.2 of the SPM (FMC 2004), EPA received public input that two transformers containing PCB oil were allegedly buried west of the Slag Pit. The specific public comment was *"2 transformers [15' X 15'] full of PCB oil*

[4] EPA identified the area surrounding product collection sumps at the Phos Dock as AOC #2 in its March 2002 RCRA Facility Assessment. Because this area is within the larger area identified by FMC as Remediation Unit #1 (or AOC #1), FMC believes it is redundant to designate the Phos Dock area as an AOC.

buried w of slag pit behind – on flat ground btw furnace bg and mobile shop, probably under the road now; used to store electrodes there, under overhead slurry lines – near fuel island." The location cited in the public comment corresponds to the northern portion of RU#12 (Former RP&S Area and Mobile Maintenance Shop). FMC is unaware of any transformers having been buried at this area. Burial of such used equipment would have been unlikely, given the recycling value of a used transformer (i.e., copper wire content, steel casing). Moreover, historic plant practice was to rewind the coils of large transformers and place them back in service. However, FMC agreed to investigate the potential presence of buried transformers in this area as an element of the RI Report Update. Pending further research into this issue during preparation of the RI Report Update, the updated CSM will assume that buried transformers containing PCBs may be present beneath a portion of RU#12, and that the transformers represent a potential source of PCBs.

Areas Operated With and Without Sustained Hydraulic Head: The original CSM did not distinguish among sources based on whether the source was operated with, or without, a sustained hydraulic head. The EMF Site RI found that unlined waste management units (e.g., Pond 8S) that operated with a sustained applied hydraulic head impacted both underlying soils to depths of up to 90 feet and groundwater in the upper aquifer. However, the RI also found that potential source areas that operated without a sustained applied hydraulic head did not significantly impact underlying soils (except where locally mixed through mechanical action) and that these sources did not contribute to contamination of the uppermost aquifer. This distinction between sources has been introduced to the updated CSM in order to clarify the nature and extent of impacted exposure media.

Free liquids may have been present in wastes managed at certain unlined units that did not operate with a sustained hydraulic head. These areas were the landfills within RU 17, 18 and 19, the Disposal Area behind the Laboratory and the Chemical Lab Seepage Pit in RU 5, and the Calciner Solids Stockpiles in RU 16. Free liquids, if present, may have seeped into underlying soils. Deep soil borings were completed at the Active Landfill (RU 18), the Chemical Laboratory Seepage Pit (RU 5), and the Calciner Solids Stockpile (RU 16) during the EMF RI. Although samples from these borings indicate some contaminant migration in the soils, there was no indication of groundwater contamination emanating from these sites using FMC's existing well network.

Petroleum fuels were stored and used at RU 20, and potential releases from these hydrocarbon storage facilities have not been fully investigated. At this time, the CSM recognizes that the operation of fuel storage facilities may have impacted soils and groundwater.

Feedstock Stockpiles: The sites of former unlined stockpiles of coke (SWMU 105) in RU#7 and nodules (SWMU 106) in RU#9 are new potential sources in the updated CSM.

2.2.2 Update: Potential Release Mechanisms

This section identifies a release mechanism (process spills containing P4) that was not described in the original conceptual site model for the EMF Site. It also describes modifications to release mechanisms identified in the original EMF CSM.

Subsurface Excavation: Subsurface excavation of areas containing residual P4 from historic process spills and leakage of P4 from manufacturing process units during excavation for utility line installation or facility construction is identified as a release mechanism associated with P4 production, storage, and handling areas.

Direct Contact: Direct contact is identified as a release mechanism associated with contaminated surface soils and exposed industrial feedstocks, by-products, and wastes.

Erosion/Storm Water Runoff: Erosion/storm water runoff is identified as a release mechanism associated with contaminated surface soils and exposed industrial feedstocks, by-products, and wastes.

Infiltration/Percolation: The original EMF CSM identified infiltration/percolation as a release mechanism associated with ponds and other waste management units, without classifying units with respect to whether they were operated with or without a sustained hydraulic head. The updated CSM recognizes infiltration/percolation as a release mechanism associated with sources that operated with a sustained hydraulic head. Pursuant to the RI findings noted earlier, the updated CSM does not identify infiltration/percolation as a release mechanism associated with sources that operated without a sustained hydraulic head with the exception of unlined units within RUs 4, 5, 16, 17, 18, and 19 where wastes containing free liquids may have been managed. In addition, the updated CSM recognizes infiltration/percolation as a potential release mechanism where petroleum fuels were stored in RU 20.

Use of Byproduct as Fill: The use of slag (a by-product from manufacturing elemental phosphorus) as fill was previously identified in the EMF Site CSM for the FMC plant area. The updated CSM continues to identify the potential use of byproduct as fill as a potential release mechanism.

Surface Water Discharge: The original CSM identified surface water discharge as a release mechanism associated with the IWW Ditch. As noted earlier, FMC terminated the IWW discharge to the Portneuf River in August 2002. Consequently, the updated CSM deletes this surface water discharge as a release mechanism. The EMF RI Report demonstrated that there was no discharge of storm water runoff to surface water because runoff was contained within the FMC plant area. This finding remains applicable.

Air Emissions: The original CSM identified air emissions as a release mechanism from three groups of FMC potential sources. As noted earlier, particulate emissions were substantially reduced subsequent to the ROD and were largely eliminated upon cessation of manufacturing operations in December 2001. Moreover, gaseous emissions of phosphine and hydrogen cyanide from surface impoundments used to manage hazardous wastes have been effectively mitigated under the RCRA closure plans for these units. The updated CSM does not identify air emissions as a primary release mechanism. However, particulate emissions are identified in the updated CSM as a secondary release mechanism associated with activities (e.g., excavation, vehicle traffic on unpaved roads) that have the potential to generate fugitive dust emissions from impacted soils.

2.2.3 Update: Potential Exposure Media

This section updates the description of environmental media that could be impacted by potential releases from sources within the FMC Plant OU.

Soil: Soil quality may have been impacted through the following historical and/or current release mechanisms:

- Infiltration/percolation of constituents from a) unlined waste management units that operated with a sustained hydraulic head; b) unlined waste management units at which wastes containing free liquids were managed; and c) petroleum storage facilities, could have impacted subsurface soils
- Deposition (fallout) of constituents from former emissions at the FMC and Simplot facilities;
- Process spills and leakage from former P4 production, storage, and handling areas;
- Storage of feedstocks, byproducts, or waste materials in unlined stockpiles;
- Use of feedstocks, byproducts, or waste materials as fill (including use of materials in roadbed); and
- Spills of solvent and/or petroleum hydrocarbons at limited areas of RU 5, 12, 20, and 22b.[5]

Air: Air quality may be impacted through the following release mechanisms:

- Generation of fugitive dusts by wind;
- Generation of fugitive dusts by vehicle traffic on unpaved roads containing feedstocks, byproducts, or waste materials;
- Generation of fugitive dusts from excavation of impacted soils;
- Oxidation of P4 during excavation soils containing over 1,000 mg/kg P4, resulting in a potential fire or evolution of smoke (P2O5);
- Radon emanation from feedstocks, byproducts, or waste materials containing radium-226;[6]
- Intrusion of organic vapors into buildings overlying the limited areas of RU 5, 12, 20 and 22b at which solvent wastes may be present[7]; and
- Air emissions from the adjacent J.R. Simplot Co. facility.

Groundwater: Groundwater quality may have been impacted through the following release mechanisms:

- Infiltration/percolation of constituents from unlined waste management units that operated with a sustained hydraulic head, and in the case of the J.R. Simplot Co. gypstack, continues to operate with a sustained hydraulic head

Surface Water and Sediment: There are no surface water bodies within the FMC Plant OU. However, the Portneuf River and Batiste Springs Channel are within the adjacent Off-Plant OU.

[5] The potential presence of solvent and petroleum hydrocarbon contamination is believed to be restricted to RU 5, 12, 20, and 22b as discussed in Section 6.

[6] The EMF ROD requires that future office buildings be constructed using radon control methods specified in an EPA guidance document titled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" (EPA 1994a)

[7] The potential presence of solvent and petroleum hydrocarbon contamination is restricted to RU 5, 12, 20, and 22b as discussed in Section 6.

Surface water and sediment quality within these bodies could be impacted through the following release mechanisms:

- Discharge of impacted groundwater to the Portneuf River in the vicinity of Batiste Springs.

2.2.4 Update: Potential Receptors and Routes of Exposure

This section updates the identification of potential receptors and routes of exposure that could be affected by potential releases from sources within the FMC Plant OU.

Potential Receptors:

- Commercial/Industrial Worker. The indoor office worker could be exposed to dust generated from erosion of surface soils. The outdoor worker[8] could be exposed to the upper two feet of soil.
- Utility Worker. The utility worker engaged in excavations for utility line installation could be exposed to the upper 10 feet of soil.
- Construction Worker. The construction worker engaged in excavations for facility construction could be exposed to the upper 10 feet of soil.
- Off-Site Resident. The off-site resident at the site boundary could be exposed to fugitive dusts from traffic on unpaved roads generated by site construction activities and wind generated fugitive dusts.

Potential Routes of Exposure:

- Incidental ingestion of constituents in soils by outdoor and indoor workers.
- Dermal absorption of constituents in soils by outdoor workers.
- External exposure[9] to gamma radiation associated with decay of uranium-238 and its daughters in soils, byproducts, and waste materials by outdoor workers.
- Exposure of utility or construction workers to fire or inhalation of smoke (P2O5) in the event that P4 in sufficient concentration (i.e., 1,000 mg/kg) is exposed to air as a result of excavation of subsoils containing P4.
- Inhalation of fugitive dusts by outdoor workers and nearby residents.

[8] Periodic monitoring and maintenance activities will be performed under the post-closure care plans for RCRA hazardous waste management units (e.g., Pond 16S) and the post-remedial action plans for areas remediated under the IDEQ Consent Order and the final CERCLA ROD for the FMC Plant OU. Potential exposure pathways for workers engaged in these activities, such as collection of groundwater quality monitoring samples and maintenance of final caps at closed impoundments, will be subject to unit-specific health and safety procedures developed under RCRA, IDEQ, and CERCLA standards, and are not applicable to the Commercial/Industrial Worker exposure scenario.

[9] This pathway was recognized in EMF Site CSM and is retained in the updated CSM.

- Inhalation of radon and its decay resulting from radon intrusion into indoor air by indoor workers.[10]
- Inhalation of organic vapors intruding into indoor air by indoor workers at limited portions of RU 5, 12, 20, and 22b.[11]

Inhalation of radon and its decay resulting from radon intrusion into indoor air by indoor workers will be prevented through institutional controls specified in the EMF ROD for the FMC Operable Unit. Ingestion of groundwater exceeding MCLs and RBCs will be prevented by institutional controls specified in the EMF ROD for the FMC Operable Unit.

Receptors and routes of exposure (i.e., incidental ingestion, dermal contact, and consumption of fish) associated with surface water and sediment impacted by the discharge of impacted groundwater are addressed by the Off-Plant Operable Unit in the EMF ROD.

2.2.5 Update: Site-Related Constituents

This section updates the identification of site-related constituents associated with potential releases from sources within the FMC Plant OU. The Constituents of Potential Concern (COPCs) evaluated in the EMF ROD are reprinted in Table 2-3.

Elemental Phosphorus and its oxidation products: P4 and P2O5 were recognized as site-related constituents in the 1998 EMF ROD. As noted in the ROD, "Quantitative evaluation of potential risks from phosphorus and its oxidation products [e.g., P2O5] were unavailable due to the lack of a standard EPA method for measurement of these constituents in air, and lack of information of the toxicological effects from inhaling low levels of these substances over a prolonged period of time." (EPA 1998, page 48-49) As noted earlier, the presence of P4 beneath the Furnace Building, the history of spills and releases of process materials containing, or potentially containing, P4, and the potential for similar P4 releases to surrounding soils from other manufacturing process units related to P4 production, handling, and storage confirms that elemental phosphorus and its oxidation products are site-related constituents. Given the cessation of the P4 manufacturing process, it is inappropriate to evaluate P4 as an airborne constituent (as indicated in the excerpt from the EMF ROD noted above). Rather, P4 and its oxidation products should be evaluated as potential soil-based constituents. At low concentrations, exposure to P4 and its oxidation products can occur via incidental soil ingestion and inhalation of fugitive dusts; however, if present at concentrations above 1,000 mg/kg, P4 can ignite if exposed to air in sufficient quantity.

2.3 Updated Conceptual Site Model

The results of the evaluations reported in Sections 2.1 and 2.2 are used in updating the conceptual site model for the FMC Plant OU in Section 2.3. The updated CSM reflects the recent changes at the FMC facility as well as the potential future industrial or commercial redevelopment of the FMC facility. In light of the cessation of phosphate ore processing at the FMC facility and its potential future industrial or commercial redevelopment, the updated CSM

[10] The EMF ROD requires that future office buildings be constructed using radon control methods specified in an EPA guidance document titled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" (EPA 1994a)

[11] The potential presence of solvent and petroleum hydrocarbon contamination is believed to be restricted to RU 5, 12, 20, and 22b as discussed in Section 6.

for the FMC Plant OU will be used as a framework to develop the scope of a supplemental remedial investigation and feasibility study of remedial action alternatives for the FMC Plant OU.

EPA provided two sets of comments from the agency coordination committee on an October 2003 draft schematic of the updated CSM. These comments, which are reprinted in Table 2-4, concern the identification of potential sources, release mechanisms, exposure media, and exposure pathways. Table 2-4 outlines how these have been addressed in the updated CSM.

The updated CSM illustrates how contaminants from source areas may be transported to other media and identifies which media are of principal concern with respect to potential current and future receptors and exposure pathways. The updated CSM reflects a future commercial/industrial land use for the FMC Plant OU, with institutional land use controls in place that prevent residential uses of the site as well as preventing consumption of contaminated groundwater, as required by the EMF ROD for the FMC OU.

Figure 2-10 illustrates the updated CSM for potential human exposure within the FMC OU. Individuals potentially exposed to FMC OU-related contaminants include current and potential future site workers and nearby residents. The principal current and/or potential future exposure pathways are:

- Dermal contact with, and incidental ingestion of, contaminated soils, byproducts, and waste materials;
- External radiation exposure from contaminated soils, byproducts, and waste materials;
- Inhalation of fugitive dusts generated during excavation of contaminated soils, byproducts, and waste materials;
- Fire or smoke if P4 is exposed to air as a result of excavation of subsoils containing P4 at a concentration above 1,000 mg/kg;
- Incidental ingestion of P4 and inhalation of fugitive dusts assumed to contain phosphoric acid are potential exposure pathways for soils containing less than 1,000 mg/kg P4;
- Inhalation of radon, and exposure to radon-decay products, in indoor air;[12]
- Inhalation of organic vapors intruding into indoor air by indoor workers at limited portions[13] of RU 20; and
- Inhalation by off-site residents of fugitive dusts generated by wind and traffic on unpaved roads during site construction activities.

[12] The EMF ROD requires that require that future office buildings be constructed using radon control methods specified in an EPA guidance document titled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" (FMC 1994a)

[13] The potential presence of solvent and petroleum hydrocarbon contamination is restricted to RU 20, as discussed in Section 3.

Potential Sources

The updated CSM identifies potential sources of hazardous substances within the FMC Plant OU, potential release mechanisms from these sources, and potential current and future exposure pathways to such releases. It also identifies potential sources beyond the boundary of the FMC Plant OU that may contribute to potential exposure within the FMC Plant OU.

The updated CSM is based on information obtained during the EMF Site RI and FS for the FMC Subarea (FMC 1997) and evaluation of site conditions since completion of the EMF Site RI and FS for the FMC Subarea. The EMF Site RI found that unlined waste management units that operated with a sustained applied hydraulic head contributed releases to groundwater in the upper aquifer. The RI also found that potential source areas that operated without a sustained applied hydraulic head did not contribute to contamination of the uppermost aquifer. These findings have been used in updating release mechanisms and potential exposure media associated with each type of waste management unit, except as noted below:

- Free liquids may have been present in wastes managed at certain unlined units that did not operate with a sustained hydraulic head. These areas were the landfills within RU 17, 18 and 19, the Disposal Area behind the Laboratory and the Chemical Lab Seepage Pit in RU 5, and the Calciner Solids Stockpiles in RU 16. Free liquids, if present, may have seeped into underlying soils. Deep soil borings were completed at the Active Landfill (RU 18), the Chemical Laboratory Seepage Pit (RU 5), and the Calciner Solids Stockpile (RU 16) during the EMF RI. Although samples from these borings indicate some contaminant migration in the soils, there was no indication of groundwater contamination emanating from these sites using FMC's existing well network.
- Petroleum fuels were stored and used at RU 20, and potential releases from these hydrocarbon storage facilities have not been fully investigated. At this time, the CSM recognizes that the operation of the fuel storage facilities may have impacted soils and groundwater.

The updated CSM also reflects an initial consideration of former working areas of the plant[14] that were excluded from the RI, FS, and ROD. The updated CSM includes the following additional potential sources: Area of Concern #1 (comprised by the Furnace Building, Phos Dock, and Secondary Condenser area); the Slag Pit (prior to installation of slag ladling); former shale ore handling areas; former nodule and nodule fines handling areas; and the former coke storage area. Contamination of surface soils by deposition of former emissions from the FMC and Simplot facilities is recognized as a secondary source.

The operational history and features of former working areas will be further evaluated as the specific objectives of the Supplemental RI/FS are further developed. The updated CSM will be revised if this evaluation identifies additional potential sources, release mechanisms, or exposure pathways.

[14] Areas of the FMC facility listed in Table J-1 of FMC's RCRA Part B Permit Application (as amended September 2002) have been reviewed to identify former working areas included in this CSM.

Potential Release Mechanisms

Potential release mechanisms that could result in exposure to FMC OU-related contaminants are:

- The use of by-product (i.e., slag) from the manufacturing process as fill;
- Direct contact with contaminated surface soils and industrial feedstocks, by-products, and wastes that are stored on the ground surface;
- Excavation that exposes residual P4 at a concentration above 1,000 mg/kg from historic process spills containing P4 and leakage of P4 from manufacturing process units during excavation for utility line installation or facility construction;
- Erosion/storm water runoff of contaminated surface soils and industrial feedstocks, by-products, and wastes that are stored on the ground surface;
- Infiltration and percolation into soils and groundwater from a) unlined waste management units that operated with a sustained applied hydraulic head; b) unlined waste management units at which wastes containing free liquids were managed; and c) petroleum storage facilities within RU 20;
- Generation of fugitive dusts by traffic on unpaved roads during site construction activities; and
- Fugitive dust generated by wind and excavation-related activities.

Exposure Medium - Air

Emissions from the active Simplot facility might affect air quality within the FMC Plant OU.[15] FMC facility air emissions related to operations ceased in December 2001 other than minor sources (e.g., steam boilers) related to decommissioning activities. Fugitive dusts generated by traffic on unpaved roads during site construction activities might be inhaled by off-site residents.

Exposure Medium - Soils

The updated CSM recognizes the potential for releases to surface soils from feedstocks, by-products, and wastes in areas without a sustained applied hydraulic head. As determined by the EMF Site RI, in the absence of a sustained hydraulic head, such sources have had little effect on subsurface native soils, and essentially no effect below a depth of five feet. Areas to which a sustained hydraulic head has been applied, such as the former unlined ponds, have had the potential to impact both underlying soils and groundwater in the uppermost aquifer.

With the exception of Cell B of Pond 18 and the Calciner Ponds 2C and 5C, all areas of sustained hydraulic head at the FMC Plant OU have been dewatered, backfilled, and covered with either a temporary cover or (in the case of Ponds 8S and 9E), a final cover. During remedial construction and pending installation of caps, worker (and construction worker) exposure to contaminated surface and subsurface soils within the FMC Plant OU is currently

[15] It is assumed that by compliance with the Clean Air Act, these emissions will not impact the FMC Plant OU. Consequently, these ongoing emissions will not be considered in a quantitative manner. Characterization of these releases and the associated development of remedial action objectives and evaluation of remedial action alternatives are not within the scope of the supplemental RI/FS for the FMC OU.

minimized by administrative controls. Physical barriers and facility security systems prevent trespassers from accessing contaminated surface soils.

The EMF Site RI found that certain fluoride emissions from the Simplot facility have the potential to impact surface soils in the off-plant area (part of which is in what is now defined as the FMC Plant OU). As noted earlier, FMC facility air emissions related to operations ceased in December 2001 other than minor sources (e.g., steam boilers) used for decommissioning activities. Consequently, the CSM recognizes deposition of historic emissions from the FMC facility onto surface soils within the FMC Plant OU as a previous, and discontinued, release mechanism.

Exposure Medium - Groundwater

The updated CSM recognizes sources that operated with a sustained hydraulic head at both the FMC facility and the Simplot facility have released contaminants to groundwater in the uppermost aquifer. In accordance with the EMF Site ROD, FMC shall implement legally enforceable land use controls that will run with the land (i.e., deed restrictions, limited access, well restrictions and/or well head protection) to prevent ingestion of groundwater with constituents of concern above MCLs or RBCs. These controls will remain in place as long as the groundwater exceeds MCLs or RBCs, and they apply to all groundwater within the FMC and Simplot property boundaries. Because of this, groundwater as a future exposure medium can be effectively ruled out in the updated CSM.

The EMF Site RI found that groundwater in the uppermost aquifer within the EMF site study area has been impacted by releases from former unlined waste management units at the FMC facility (former unlined ponds 1E through 6E, 00S through 9S, former unlined calciner ponds, and the Slag Pit wastewater collection sump) and by the gypsum stack and the former east overflow pond at the adjacent J.R. Simplot facility. Groundwater impacted by the gypsum stack is present in the eastern (Joint Fenceline) area of the FMC facility.

The EMF Site RI also identified low levels of site-related contaminants in the deeper aquifer in very limited areas of the FMC Plant OU, and at very low concentrations (below MCLs, and only slightly elevated above background levels). The American Falls Lake Beds were delineated beneath the FMC plant area as well as the old pond area (See Sections 3.3, 4.4, and Appendix K of the EMF RI Report).

Vertical gradients were evaluated during the EMF RI and in subsequent groundwater monitoring events. Monitoring well pairs located near the Simplot and FMC production wells displayed upward vertical gradients while the production wells were pumping, with the exception of slight downward gradient in the Shallow/Deep well pair 125/126 near FMC's production well FMC-3. These wells are located in a portion of the FMC Plant OU that has no indication of impacted groundwater quality. The localized and minor downward gradients were directly a result of deep groundwater extraction and would not induce the downward migration of contamination to the deeper aquifer because the shallow groundwater in area is not impacted. Overall, there was no inducement of downward gradient from these production wells that could have affected the deep aquifer within the FMC Plant OU. Sections 3.3 and 4.4 provide further information.

The EMF RI investigated the future scenario where all groundwater pumping ceased at Simplot and FMC. There was no change in the shallow groundwater flow patterns. Capture zones in the deeper aquifer were eliminated and larger volumes of deep groundwater were available for discharge to the river and springs. FMC's groundwater monitoring data collected since the plant shut down in December 2001 support these conclusions.

Because deeper groundwater was not significantly impacted by FMC sources, and because the deeper aquifer has a significantly greater flux of water, downgradient water quality should improve as a result of decreased pumping from the deeper aquifer. This is because the residual contaminants in the shallow aquifer will be diluted by a much greater flux of clean, deep groundwater in the region near the Portneuf River and Batiste Springs.

Ongoing RCRA Interim Status detection monitoring by FMC at lined hazardous waste management units within the FMC facility has found no impact on groundwater from these waste management units. The EMF Site RI found the extent of groundwater impact to be limited to properties owned by FMC and the J.R. Simplot Company, with the exception of intervening railroad and highway right-of-ways. The EMF Site RI also found that groundwater flowing from portions of the FMC facility merges with groundwater flowing from portions of the Simplot facility within the joint fenceline area of the two facilities. The EMF Site RI did not attempt to attribute or allocate release sources in characterizing the nature and extent of groundwater impact within the joint fenceline area and in the properties owned by FMC and Simplot north of Highway 30.

Receptors and Routes of Exposure

A work force of approximately 10 FMC employees and up to 100 contract personnel (during the construction season) are engaged at the FMC facility in conducting the closure of RCRA waste management units and the calciner ponds, conducting decommissioning and asset removal activities, and identifying opportunities for future commercial or industrial reuse of the facility. These activities are expected to continue through 2005/2006, after which only a minimal work force[16] will remain at the site pending commercial/industrial reuse.

Under current (i.e., 2004 and 2005) conditions, individuals who may experience exposure at the FMC Plant OU are limited to plant workers. Current workers could be exposed to contamination through incidental contact with, and ingestion of soils, and external exposure to gamma radiation from byproducts and waste materials remaining at the site. Current workers could also be exposed to emissions from the adjacent Simplot facility.

Worker exposure to contaminated surface and subsurface soils at the FMC facility is currently minimized by administrative controls. Physical barriers and facility security systems prevent trespassers from currently accessing contaminated surface soils.

Consideration is being given to heavy and light industrial and manufacturing uses on the plant site, including warehouses for a distribution facility, a power generation plant, or light industrial, manufacturing and commercial uses on portions of the FMC property. The updated CSM assumes that the potential sources, release mechanisms, and exposure pathways applicable to

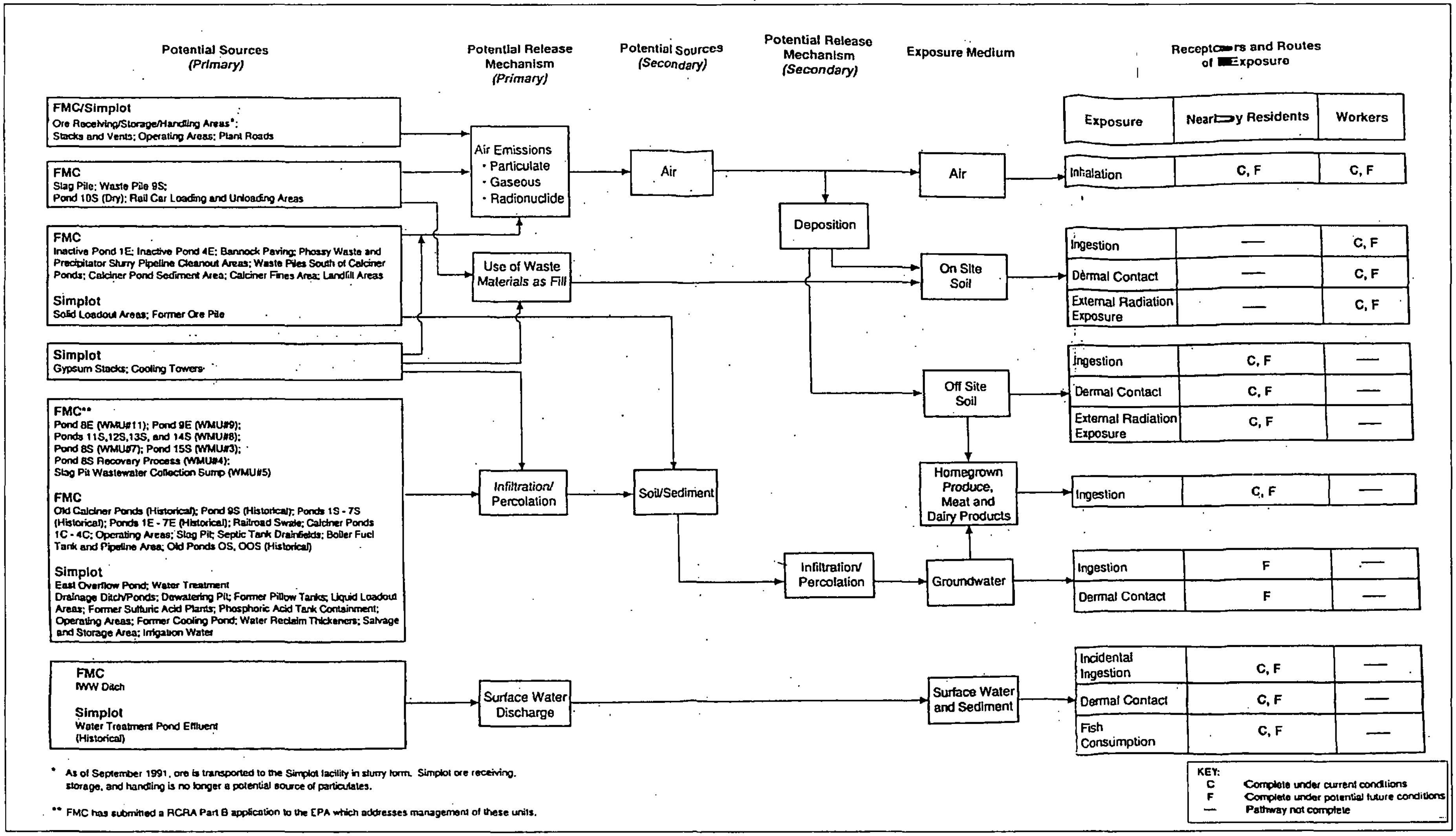
[16] Periodic monitoring and maintenance activities will be performed under the post-closure care plans for RCRA hazardous waste management units (e.g., Pond 16S) and the post-remedial action plans for areas remediated under the IDEQ Consent Order and the final CERCLA ROD for the FMC Plant OU. Potential exposure pathways for workers engaged in these activities, such as collection of groundwater quality monitoring samples and maintenance of final caps at closed impoundments, will be subject to unit-specific health and safety procedures developed under RCRA, IDEQ, and CERCLA standards, and are not applicable to the Commercial/Industrial Worker exposure scenario.

current workers are similarly applicable to future workers associated with potential industrial reuse of all, or portions of, the FMC facility.

The updated CSM identifies four types of future receptors: Commercial/Industrial Worker (subdivided into an Indoor Worker and an Outdoor Worker[17]); Utility Installation Worker; Construction Worker; and Off-site Resident.[18]

There is no current residential use of land within the FMC Plant OU and residential use of land within the FMC Plant OU would be inconsistent with industrial reuse. Moreover, FMC has filed land use restrictions with Power County that preclude residential uses of the FMC Plant OU, with the exception of the parcel formerly owned by the Union Pacific Railroad containing the closed Batiste Spring pumphouse. The FMC plant obtains its drinking water from wells within the deep aquifer, which currently meets MCLs. Future potential users of the FMC Plant OU would be required to obtain drinking water from wells within the deep aquifer or from the Pocatello municipal water supply system.

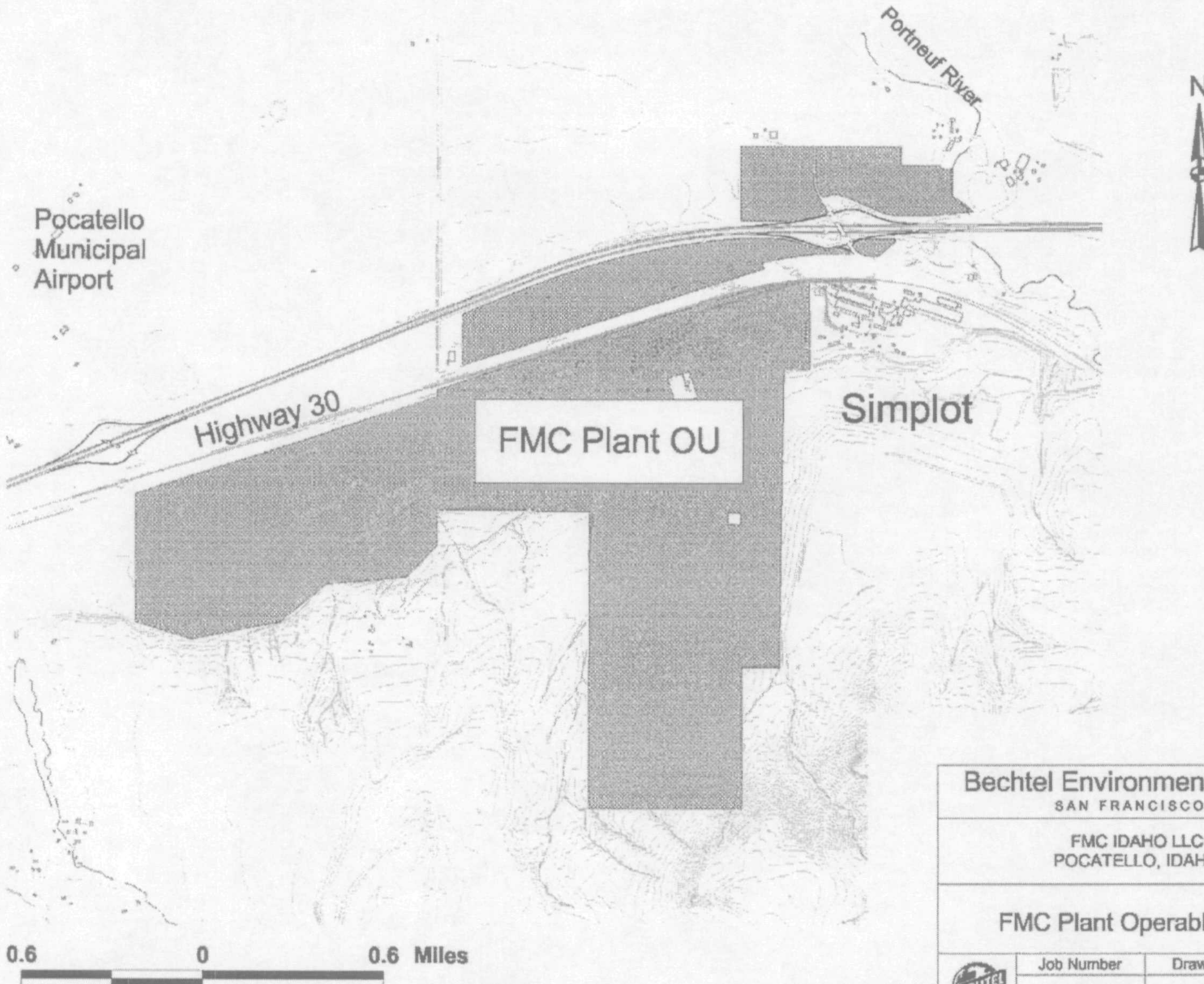
[17] A commercial/industrial worker may divide his/her time between indoor and outdoor activities.
[18] The Off-Site Resident might inhale fugitive dusts generated by traffic on unpaved roads during site construction activities and wind generated fugitive dusts for the remainder of the exposure duration.



* As of September 1991, ore is transported to the Simplot facility in slurry form. Simplot ore receiving, storage, and handling is no longer a potential source of particulates.

** FMC has submitted a RCRA Part B application to the EPA which addresses management of these units.

Figure 2-1
Conceptual Site Model from the EMF Site Record of Decision



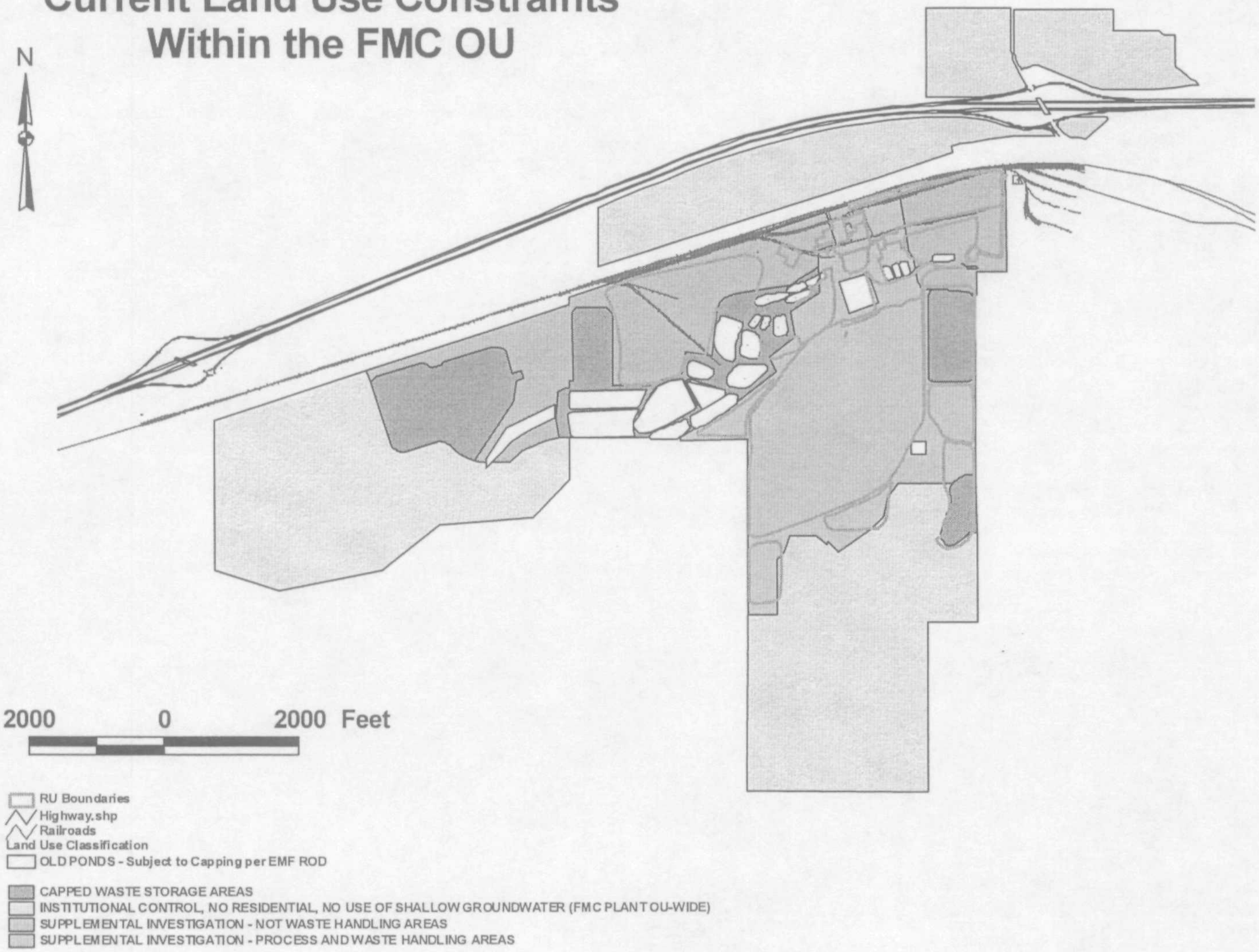
Bechtel Environmental, Inc.
SAN FRANCISCO

FMC IDAHO LLC
POCATELLO, IDAHO

FMC Plant Operable Unit

Job Number	Drawing No.	Rev.
20906	Figure 2-2	

Figure 2-3
Current Land Use Constraints Within the FMC OU



"The process of developing a CSM — a comprehensive representation of a site that illustrates contaminant distributions in three dimensions, along with release mechanisms, exposure pathways, migration routes, and potential receptors — is similar for non-residential and residential soil screening evaluations. The key differences in developing a CSM for a site with anticipated non-residential future land use are:

- **Identification of Land Use.** Identifying the reasonably anticipated future land use for an NPL site is critical to the development of the CSM. It is the first step toward identifying the future site receptors and activities that determine the key exposure pathways of concern. Future land use may also influence the selection of a screening approach by a site manager. Future industrial or commercial sites may be evaluated using any of the three screening approaches (generic, simple site-specific, or detailed site-specific modeling); sites with other non-residential future land uses (e.g., agriculture, recreation) are appropriately addressed using a detailed site-specific modeling approach.
- **Receptors for Non-Residential Uses.** When developing CSMs for commercial or industrial sites, the focus should be on worker receptors, unless anticipated future site activities are expected to result in substantial exposures to members of the public and/or children visiting the site (see Section 4.1.3). CSMs for commercial or industrial sites should include long-term receptors (e.g., indoor workers and outdoor workers) and, if appropriate, short-term, high intensity receptors (e.g., construction workers). For sites with future agricultural or recreational uses, CSMs should address a wider range of potential receptors (e.g., farm workers and children/adults exposed to contamination through consumption of agricultural products or children/adults engaged in recreational activities).
- **Activities for Non-Residential Uses.** In order to identify the exposure pathways pertinent to future exposures, site managers should consider the potential future site activities that may contribute to exposure. Examples of activities likely to occur at commercial/industrial sites include: outdoor maintenance work and landscaping, indoor commercial activities (e.g. wholesale or retail sales) and office work.

A key part of CSM development for all soil screening evaluations is the identification of ground water use. Site managers should consult EPA's policy on ground water classification (presented in Section 4.2.3) and should coordinate with state or local authorities responsible for ground water use and classification to determine whether the aquifer beneath or adjacent to the site is a potential source of drinking water. The migration to ground water pathway is applicable to all potentially potable aquifers, regardless of current or future land use." (EPA 2002, page 4-7)

"Normally, under the generic and simple site-specific screening methodologies, the receptors for the commercial/industrial scenario are limited to workers. EPA does not warrant evaluation of exposures to members of the public under a non-residential land use scenario for two reasons. First, because public access is generally restricted at industrial sites, workers are the sole on-site receptor. Second, even though the public usually has access to commercial sites (e.g., as customers), SSLs [soil screening levels] that are protective of workers, who have a much higher exposure potential because they spend substantially more time at a site, will also be protective of customers." (EPA 2002, page 4-3)

Figure 2-4
EPA Guidance for Developing a Conceptual Site Model for a Site with Anticipated Non-Residential Future Land Use

"As shown in Exhibit 4-1, two potential worker receptors are addressed under the commercial/industrial scenario. They are characterized by the intensity and location of their activities, and by the frequency and duration of their exposures.

> **Outdoor Worker.** This is a long-term receptor exposed during the work day who is a full time employee of the company operating on-site and who spends most of the workday conducting maintenance activities outdoors. The activities for this receptor (e.g., moderate digging, landscaping) typically involve on-site exposures to surface and shallow subsurface soils (at depths of zero to two feet). The outdoor worker is expected to have an elevated soil ingestion rate (100 mg per day) and is assumed to be exposed to contaminants via the following pathways: incidental ingestion of soil, dermal absorption of contaminants from soil, inhalation of fugitive dust, inhalation of volatiles outdoors, and ingestion of ground water contaminated by leachate. The outdoor worker is expected to be the most highly exposed receptor in the outdoor environment under commercial/industrial conditions. Thus, SSLs for this receptor are protective of other reasonably anticipated outdoor activities at commercial/industrial facilities.
>
> **Indoor Worker.** This receptor spends most, if not all, of the workday indoors. Thus, an indoor worker has no direct contact with outdoor soils. This worker may, however, be exposed to contaminants through ingestion of contaminated soils that have been incorporated into indoor dust, ingestion of contaminated ground water, and the inhalation of contaminants present in indoor air as the result of vapor intrusion. SSLs calculated for this receptor are expected to be protective of both workers engaged in low intensity activities such as office work and those engaged in more strenuous activity (e.g., factory or warehouse workers).

The commercial/industrial scenario does not include exposures during construction activities. However, EPA recognizes that construction is likely to occur at many NPL sites and that it may lead to significant short-term exposures."

(EPA 2002, page 4-3 and 4-4)

Figure 2-5a
EPA Guidance for Identifying Receptors for a Commercial/Industrial Land Use

"Construction is likely to occur as part of the redevelopment process at many NPL sites, regardless of the anticipated future land use. Although construction is typically of relatively short duration (a year or less), it may lead to significant exposures to construction workers and off-site residents as a result of soil-disturbing activities that include excavation and vehicle traffic on unpaved roads. To help address this potential concern, EPA has developed a construction soil screening scenario that site managers can use to develop construction SSLs [soil screening levels]."

"The construction scenario assumes that one or more residential or commercial buildings will be erected on a site and that construction will occur within areas of residual soil contamination. Because the activities associated with such a project are likely to result in significant direct contact soil exposures (i.e., ingestion and dermal absorption) to construction workers and are likely to increase emissions of both volatiles and particulate matter from contaminated soils during the construction period, EPA recommends that site managers evaluate the construction exposure scenario whenever major construction is anticipated at a site. However, EPA realizes that developing SSLs based on a construction scenario may be difficult, especially if there is considerable uncertainty surrounding the details of future construction. In such cases, site managers can evaluate several plausible construction scenarios representing a range of activities, areal extents, and durations. The results of these evaluations can provide valuable information to help guide and focus future construction activities."

"The construction soil screening scenario evaluates exposures to construction workers present throughout a construction project, as well as exposures to nearby off-site residents. These receptors are potentially subject to higher contaminant exposures via increased volatile and fugitive dust emissions during construction activities.

- Construction Worker. This is a short-term adult receptor who is exposed to soil contaminants during the work day for the duration of a single construction project (typically a year or less). If multiple non-concurrent construction projects are anticipated, it is assumed that different workers will be employed for each project. The activities for this receptor typically involve substantial on-site exposures to surface and subsurface soils. The construction worker is expected to have a very high soil ingestion rate and is assumed to be exposed to contaminants via the following direct and indirect pathways: incidental soil ingestion, dermal absorption, inhalation of volatiles outdoors, and inhalation of fugitive dust.
- Off-site Resident. This receptor is similar to the one evaluated in the residential soil screening scenario but is located at the site boundary. The off-site resident is exposed to contaminants both during and after construction, for a total of 30 years. This receptor has no direct contact with on-site soils. Under this framework, the only exposure pathway evaluated for this receptor is the inhalation of fugitive dust, which is likely to be exacerbated during construction as a result of dust generated by truck traffic on unpaved roads."

(EPA 2002, pages 5-1, 5-2 and 5-5)

Figure 2-5b
EPA Guidance for Identifying Receptors for the Construction Scenario

"Six exposure pathways are included in the commercial/industrial soil screening scenario. These pathways, as well as the relevant receptors for each pathway, are listed below:

Surface soil pathways:

- Incidental direct ingestion — indoor worker and outdoor worker.
- Dermal absorption — outdoor worker.
- Inhalation of fugitive dusts — outdoor worker.

Subsurface soil pathways:

- Inhalation of volatiles resulting from vapor intrusion into indoor air — indoor worker.
- Inhalation of volatiles migrating from soil to outdoor air — outdoor worker.
- Ingestion of contaminated ground water caused by migration of chemicals through soil to an underlying potable aquifer — indoor worker and outdoor worker.

Site managers should consider these pathways and make thoughtful determinations about whether receptors are likely to be exposed via each pathway.

It is important to carefully consider each of the possible pathways as part of the screening process, even though a site manager may quickly decide that one or more specific pathways are not relevant for a site. If, based on an analysis of reasonably anticipated future site activities, the site manager identifies pertinent exposure pathways other than those listed above, these additional pathways should be addressed using a detailed site-specific modeling approach."

(EPA 2002, page 4-8)

Figure 2-6a
EPA Guidance for Commercial/Industrial Exposure Pathways

Summary of the Construction Scenario Exposure Framework for Soil Screening		
	Receptors	
	Construction Worker	Off-site Resident*
Exposure Characteristics	• Exposed during construction activities only • Potentially high ingestion and inhalation exposures to surface and subsurface soil contaminants • Short-term (subchronic) exposure	• Resides at the site boundary • Exposed both during and post-construction • Potentially high inhalation exposures to contaminants in fugitive dust • Long-term (chronic) exposure
Pathways of Concern[1]	• Ingestion (surface and subsurface soil) • Dermal contact (surface and subsurface soil) • Inhalation of volatiles outdoors (subsurface soil) • Inhalation of fugitive dust due to traffic on unpaved roads (surface soil)[2]	• Inhalation of fugitive dust due to traffic on unpaved roads during construction activities and wind erosion (surface soil)

[1] The inhalation of volatiles is not included as a pathway of concern for off-site residents because SSLs developed for this pathway for the construction worker (short-term) and for the on-site worker receptor under the commercial/industrial scenario (long-term) were shown to be protective for this receptor.

[2] Analyses of the inhalation of fugitive dust pathway suggest that the most significant contribution to exposure comes from disturbance of surface soil by traffic on unpaved roads. Therefore, the framework for simple site-specific soil screening evaluation for this pathway focuses on surface soil. If a site manager determines that excavation of subsurface soil or other earth-moving activities may lead to significant exposure to fugitive dust, it may be appropriate to use a more detailed site-specific modeling approach to develop a construction SSL for this pathway. Appendix E provides guidance on conducting such modeling.

* Screening levels for on-site commercial/industrial worker are likely more conservative.

Source: Reproduced from portion of Exhibit 5-1 in EPA 2002, page 5-3.

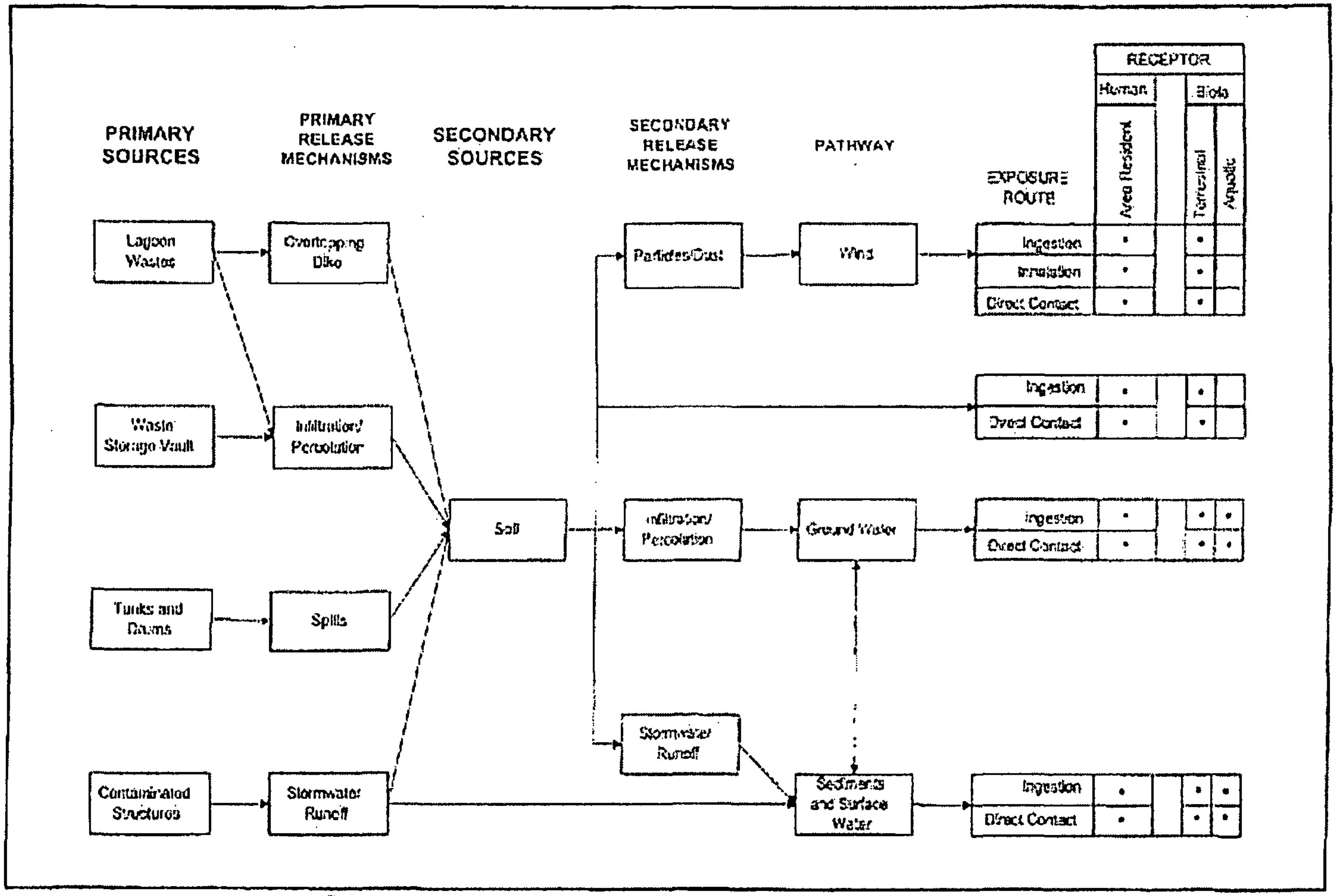
Figure 2-6b
EPA Guidance for Construction Scenario Exposure Pathways

"Regarding Step 3, EPA recommends that site managers develop a sampling plan for surface soil that will provide a reliable estimate of the arithmetic mean of contaminant concentrations. Section 2.3.2 of the 1996 *SSG* describes such a sampling plan utilizing composite samples. Guidance on developing other sampling plans using discrete samples can be found in *Guidance for Choosing a Sampling Design for Environmental Data Collection* (U.S. EPA 2000a). Although there may be differences in the activities and exposures likely to occur under non-residential and residential use scenarios, EPA is not recommending specific changes to the surface soil sampling approach when performing non-residential soil screening evaluations. Unless there is site-specific evidence to the contrary, an individual receptor is assumed to have random exposure to surface soils at both residential and non-residential sites."

"However, as in the 1996 *SSG*, EPA emphasizes that the depth over which soils are sampled should reflect the type of exposures expected. Activities typical for non-residential site uses (e.g., landscaping and other outdoor maintenance activities) may result in direct contact exposure for certain receptors to contaminants in shallow subsurface soils at depths of up to two feet. EPA expects that site managers will characterize contaminant levels in the top two feet of the soil column by taking shallow subsurface borings where appropriate. The specific locations of such borings should be determined by the likelihood of direct contact with these subsurface soils and by the likelihood that soil contamination is present at that depth. Given that these deeper soils are not characterized to the same extent as the top two centimeters of soil, the maximum measured contaminant concentration in the borings in a given exposure area should be compared directly with the SSLs, as described in Section 2.3, Step 6. Alternatively, if available evidence indicates that contaminated subsurface soils will be disturbed and brought to the surface (e.g., as the result of redevelopment activities), site managers will need to characterize subsurface contamination more thoroughly and should collect a sufficient number of samples to develop a UCL_{95} value for use in the soil screening evaluation."

(EPA 2002, page 4-6)

Figure 2-7
EPA Guidance for Assessment of Appropriate Soil Intervals



Source: Data Quality Objective Process for Hazardous Waste Site Investigations. EPA QA/G-4HW EPA/600/R-00/007, January 2000.

Figure 2-8
EPA Guidance for a Schematic Illustration of a Conceptual Site Model

Containment as a Presumptive Remedy (page 2) Waste in CERCLA landfills usually is present in large volumes and is a heterogeneous mixture of municipal waste frequently co-disposed with industrial and/or hazardous waste. Because treatment usually is impracticable, EPA generally considers containment to be the appropriate response action, or the "presumptive remedy," for the source areas of municipal landfill sites. The presumptive remedy for CERCLA municipal landfill sites relates primarily to containment of the landfill mass and collection and/or treatment of landfill gas. In addition, measures to control landfill leachate, affected ground water at the perimeter of the landfill, and/or upgradient ground-water that is causing saturation of the landfill mass may be implemented as part of the presumptive remedy.
Highlight 1: Components of the Presumptive Remedy: Source Containments (page 3) • Landfill cap; • Source area ground-water control to contain plume; • Leachate collection and treatment; • Landfill gas collection and treatment; and/or • Institutional controls to supplement engineering controls.
Characterizing the Site (page 4) The use of existing data is especially important in conducting a streamlined RI/FS for municipal landfills. Characterization of a landfill's contents is not necessary or appropriate for selecting a response action for these sites except in limited cases; rather, existing data are used to determine whether the containment presumption is appropriate. Subsequent sampling efforts should focus on characterizing areas where contaminant migration is suspected, such as leachate discharge areas or areas where surface water runoff has caused erosion. It is important to note that the decision to characterize hotspots should also be based on existing information, such as reliable anecdotal information, documentation, and/or physical evidence.
Defining Site Dynamics (page 4 – 5) The collected data are used to develop a conceptual site model, which is the key component of a streamlined RI/FS. The conceptual site model is an effective tool for defining the site dynamics, streamlining the risk evaluation, and developing the response action. Highlight 2 presents a generic conceptual site model for municipal landfills. The model is developed before any RI field activities are conducted, and its purpose is to aid in understanding and describing the site and to present hypotheses regarding: • The suspected sources and types of contaminants present; • Contaminant release and transport mechanisms; • Rate of contaminant release and transport (where possible); • Affected media; • Known and potential routes of migration; and • Known and potential human and environmental receptors. After the data are evaluated and a site visit is completed, the contaminant release and transport mechanisms relevant to the site should be determined. The key element in developing the conceptual site model is to identify those aspects of the model that require more information to make a decision about response measures. Because containment of the landfill's contents is the presumed response action, the conceptual site model will be of most use in identifying areas beyond the landfill source itself that will require further study, thereby focusing site characterization away from the source area and on areas of potential contaminant migration (e.g., ground water or contaminated sediments).

(figure continues)

Figure 2-9
Excerpts from EPA Presumptive Remedy for CERCLA Municipal Landfill Sites

Streamlined Risk Evaluation of the Landfill Source (page 6) A quantitative risk assessment also is not necessary to evaluate whether the containment remedy addresses all pathways and contaminants of concern associated with the source. Rather, all potential exposure pathways can be identified using the conceptual site model and compared to the pathways addressed by the containment presumptive remedy. Highlight 3 illustrates that the containment remedy addresses all exposure pathways associated with the source at municipal landfill sites.
Response Action Objectives • Preventing direct contact with landfill contents; • Minimizing infiltration and resulting contaminant leaching to groundwater; • Controlling surface water runoff and erosion; • Collecting and treating contaminated groundwater and leachate to contain the contaminant plume and prevent further migration from source area; and Controlling and treating landfill gas
Highlight 3: Source Contaminant Exposure Pathways Addressed by Presumptive Remedy 1. Direct contact with soil and/or debris prevented by landfill cap; 2. Exposure to contaminated groundwater within the landfill area prevented by ground-water control; 3. Exposure to contaminated leachate prevented by leachate collection and treatment; and 4. Exposure to landfill gas addressed by gas collection and treatment, as appropriate.

Source: All passages reprinted verbatim from EPA 1993.

Figure 2-9 (Cont'd)

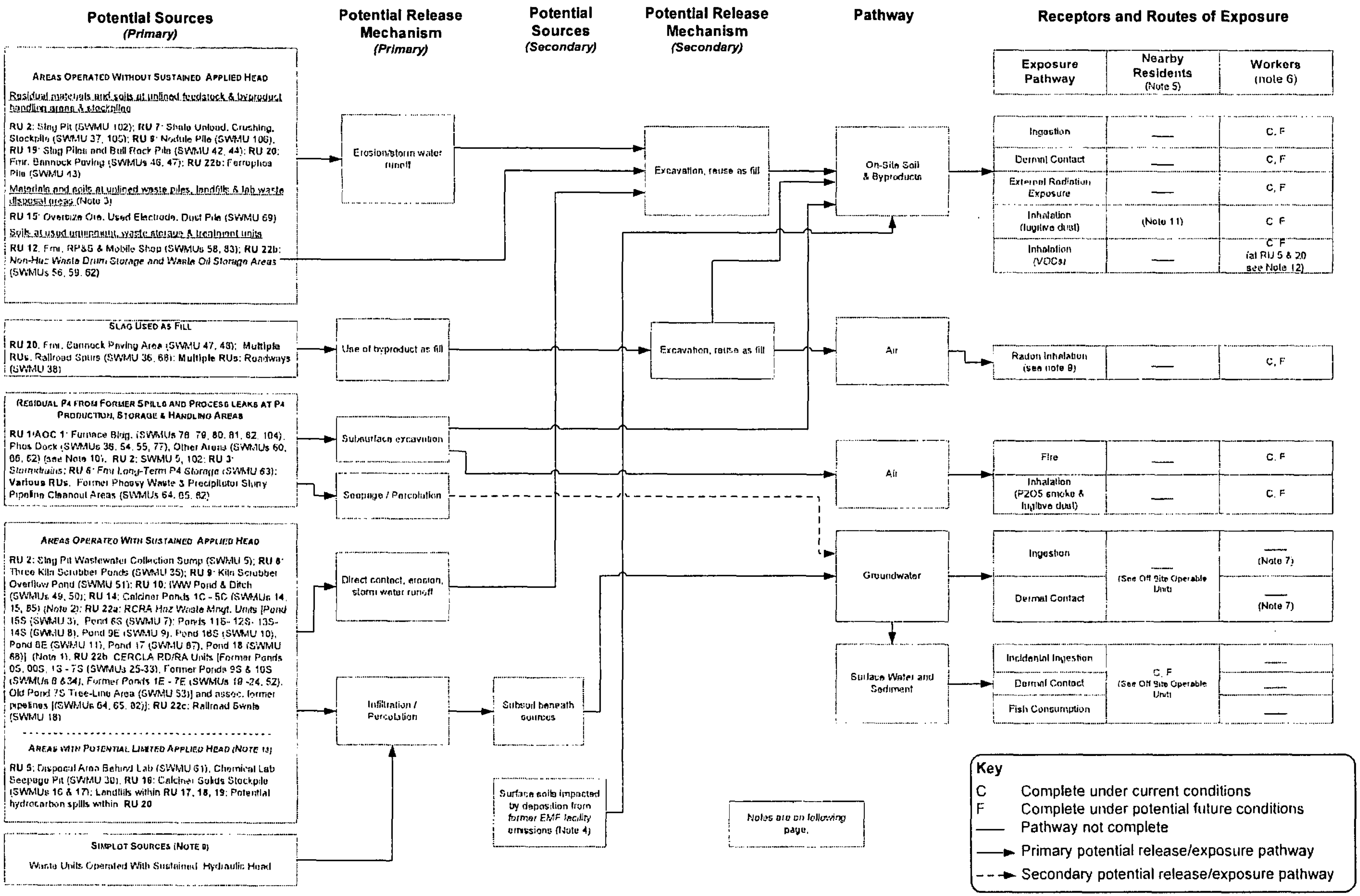


Figure 2-10: Conceptual Site Model for Potential Human Exposure to Contaminants at the FMC Operable Unit December 2004

Note 1 - These waste management units are in the process of closure pursuant to RCRA standards.

Note 2 - Remediation of the Calciner Ponds 1C-5C and the underlying Old Calciner Ponds is being conducted under a Consent Order with the IDEQ.

Note 3 - Railcars within Slag Pile included in RU 19. Alledged buried transformers included within RU 12.

Note 4 - Includes potential deposition resulting from former emissions from the FMC and Simplot facilities.

Note 5 - Based on the ROD definition of off-site areas (i.e., properties not owned by FMC or Simplot).

Note 6 - Administrative controls protect current workers from exposure.

Note 7 - Exposure precluded through administrative controls and land use restrictions.

Note 8 - Potential sources at the Simplot facility are subject to the Simplot CERCLA RD/RA Consent Decree and applicable Clean Air Act standards. Evaluation of these sources, including development of remedial action objectives, is not within the scope of the supplemental RI/FS for the FMC OU.

Note 9 - Future office buildings are to be constructed using radon control methods, per EMF ROD.

Note 10 - RU1 SWMUs 13, 73, 74, and 76 did not manage P4-containing materials. These SWMUs have been "clean closed" and are not included.

Note 11 - Off-Site Resident might inhale fugitive dusts generated by vehicle traffic on unpaved roads during site construction activities.

Note 12 - The presence of "hotspots" of volatile organic compounds at limited portions of RU 4 (SWMU 61: Disposal Area Behind Laboratory), RU 5 (SWMU 39: Chem Lab Seepage Pit) and RU 20 (Former Bannock Paving Area) are subject to further evaluation.

Note 13 - These areas did not operate with a sustained hydraulic head in a manner similar to a pond. However, free liquids may have been present in the waste materials managed or disposed at the area. If present, these free liquids may have seeped into underlying soils and groundwater.

Table 2-1

PRELIMINARY REMEDIATION UNITS AND ASSOCIATED SOLID WASTE MANAGEMENT UNITS

FMC Idaho LLC - Remediation Units and Associated Solid Waste Management Units					
Remediation Unit/SWMU Cluster	Number	Associated SWMUs (listed through 3/31/01)			SWMUs added 9/02
Furnace Building, Phos Dock and Secondary Condenser (AOC #1) (see footnote A)	1	1a. Associated with Furnace Building Area	1b. Associated with Phos Dock Area	1c. Associated with Other Areas	
		(13) Anderson Filter Media (AFM) Washing Unit	(36) Rail Car Loading and Unloading Areas	(60) Secondary Condenser and Old Fluid Bed Drier Unit	(104) #3 P4 Sump
		(73) Satellite Storage Areas for Spent Anderson Filter Media	(54) Phosphorus Loading Dock Area (Paved)	(68) Boiler Fuel Tank and Pipeline Area	AOC #1 (= RU #1)
		(74) East AFM Bin Area	(55) Paved Area between Phosphorus Loading Dock and Furnace Building	(58) Railroad Spurs	
		(75) Precipitator Dust Slurry Pots	(77) Phosphorus Loading Dock, Anderson Scrubber Blowdown Sump, and North Solid Tank (GAU)		
		(76) Medusa Scrubber Blowdown Collection Tank	(90) V-3800 tank and Associated Piping		
		(78) Washdown Collection Sumps – Furnace Building Area			
		(79) Northeast Collection Sump - Furnace Building Area			
		(80) Southeast Collection Sump – Furnace Building Area		1d. Several Areas: (38) Surface Roads	
		(81) Furnace Washdown Collection Tank (V-3600) (GAU)		(41) Stacks and Vents	
		(86) V-3700 tank and Associated Piping		(82) Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)	
		(91) NOSAP Intercept Tank (Tank T-8010)			
Slag Pit	2	(5) Slag Pit Wastewater Collection Sump (Slag Pit Sump)	(82) Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)		(102) Former Slag Pit (prior to Slag ladling))
Rec Storse, Paint Shop, P4 Decon	3	(66) Boiler Fuel Tank and Pipeline Area (former)	(72) Former Satellite Storage Area for Waste Paint Solvents	(92) P4 Maintenance Cleaning Facility	
Off Bigs & Training Cen	4	(40) Septic Tank Areas	(39) Chemical Laboratory Seepage Pit		(99) Drum Storage Area at Training Center
Laboratory & Old Drainfield	5	(1) Drum Storage Unit	(39) Chemical Laboratory Seepage Pit	(70) Satellite Storage Area for Spent Laboratory Solvents	
		(61) Disposal Area Behind Laboratory			
Former Long Term P4 Storage	6	(63) Long-Term Elemental Phosphorus Storage Tanks			(101) Railcar Loading Overflow Tank
Shale Unload, Crushing Stockpiles	7	(37) Shale Ore Handling Areas			(105) Coke Unloading Building
Calciner Area	8	(12) Wastewater Treatment Unit (Scrubber Blowdown)	(35) Three Kiln Scrubber Ponds		(103) New Horizontal Flare Pit
		(41) Stacks and Vents	(87) Flare Pit for Calciner Carbon Monoxide		
Silica Stockpiles	9	(51) Kiln Scrubber Overflow Pond			(106) Nodule Pile
IWW Pond & Ditch	10	(49) Industrial Wastewater Basin	(50) Industrial Wastewater Ditch		
Equip Area S of Calciners	11	(38) Surface Roads			
Former RP&S Area and Mobile Shop	12	(57) Transformer Salvage Area	(56) Former PCB Storage Shed	(64) Phossy Waste Pipeline Cleanout Areas and Intervals	
		(65) Precipitator Slurry Pipeline Cleanout Areas and Intervals	(71) Satellite Storage Areas for Waste Degreasing Solvents	(82) Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)	
		(83) High-Pressure Steam Cleaning Station	(84) Used Oil Collection Tank		
Pond 8S Recovery Process & Metal Scrap Prep Area	13	(4) 8S Recovery Process	(64) Phossy Waste Pipeline Cleanout Areas and Intervals	(65) Precipitator Slurry Pipeline Cleanout Areas and Intervals	(107) Portable Storage Tanker for Used Oil
		(82) Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)			
Calciner Ponds (1C - 5C)	14	(14) Original Calciner Pond (Including Old Pond 1C and Old Pond 2C)	(15) Calciner Ponds 1C (new), 2C (new), 3C, 4C	(85) Solar Drying Area (Pond 5C)	
Oversize Ore, broken electrode, baghouse dust	15	(69) Baghouse Reclaim Dust Pile			
Calciner Solids Stockpile	16	(16) Calciner Pond 1C Sediment Area South of Calciner Ponds	(17) Old Calciner Ponds Fines Area South of Calciner Ponds		
Recyclable material landfill	17	(89) Roadway Landfill (also referred to as Construction Debris and/or Recycle Landfill)			
Plant landfill	18	(45) Landfill (new) (also referred to as Solid Waste Landfill)			
Slag piles and bull rock pile	19	(42) Slag Pile Storage Areas	(44) Landfill (old)		
Former Bannock Paving area incl railspurs	20	(46) Rail Car Loading and Unloading Areas - Bannock Paving Company	(47) Bannock Paving Company Areas	(48) Surface Roads - Bannock Paving Company	
Other on-plant railspurs	21	(69) Railroad Spurs			
RCRA Waste Management Units	22a	(3) Phossy Waste Surface Impoundment (Pond 15S)	(7) Phossy Waste Surface Impoundment (Pond 8S)	(8) Phase IV Ponds—Phossy Water Clarifier Surface Impoundments (Ponds 11S, 12S, 13S, 14S)	(100) Pond Closure Surge Tank
		(9) Precipitator Slurry Drying Surface Impoundment (Pond 9E)	(10) Phossy Water Surface Impoundment (Pond 16S)	(11) Precipitator Slurry Surface Impoundment (Pond 8E)	
		(82) Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)	(87) Pond 17	(88) Pond 18	
CERCLA Remedial Design/Remedial Action	22b	(6) Area 9S (Furnace Off-Gas Solids)	(19) Pond 1E	(20) Pond 2E	
		(21) Pond 3E	(22) Pond 4E	(23) Pond 5E	
		(24) Pond 6E	(25) Pond 0S	(26) Pond 00S	
		(27) Pond 1S	(28) Pond 2S	(29) Pond 3S	
		(30) Pond 4S	(31) Pond 5S	(32) Pond 6S	
		(33) Pond 7S	(34) Pond 10S (Including Precipitator Dust Pile atop Pond 10S)	(43) Ferrophos Pile Storage Areas	
		(52) Pond 7E	(53) Old Pond 7S Tree-Line Area	(56) Drum Storage Area for other Nonhazardous Wastes	
		(59) Waste Oil Storage Area	(62) Area West of Mobile Shop	(64) Phosphorus Waste Pipeline Cleanout Areas and Intervals	
		(65) Precipitator Slurry Pipeline Cleanout Areas and Intervals	(82) Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)		
	22c	(18) Railroad Swale (Rainwater Collection Point)			
Miscellaneous Roadways	23 (also within other RUs)	(38) Surface Roads - FMC, not coincident with other RUs			
Unassigned	na	(2) West Anderson Filter Media (AFM) Bin Area (former)			

A - RU #1 includes AOC #2 (Area around the collection sumps at Phos Dock) identified by EPA in March 2002.

Table 2-2
SWMUs Associated with Elemental Phosphorus Production, Storage, and Handling

RU	SWMU No.	SWMU Name	SWMU Description	Potential for Soil Impact from SWMU*
1	54	Phosphorus Loading Dock Area	Phosphorus loading dock area where elemental phosphorus is handled. Per FMC Pocatello RCRA Consent Decree (1999) Attachment A, Point of Generation (POG) upgrades implemented in 1999.	Potential not rated by EPA prior to RCRA POG Upgrades.
1	55	Area between Phosphorus Loading Dock and Furnace Building	Area between the phosphorus-loading dock and furnace building where elemental phosphorus is loaded into rail cars. Secondary containment upgrades implemented per POG Upgrades required by FMC Pocatello RCRA Consent Decree (1999) Attachment A. Includes below-grade P4 product launders used to convey P4 from the furnace building to the Phos Dock.	Potential not rated by EPA prior to RCRA POG Upgrades.
1	60	Secondary Condenser and Old Fluid Bed Drier Unit	Secondary condenser used to remove elemental phosphorus from furnace exhaust gases; built north of former fluid bed drier unit used in early 1980s to dry and oxidize precipitator slurry.	Potential not rated by EPA. Leak from secondary condenser sump is suspected.
1	75	Former Precipitator Dust Slurry Pots	Precipitator dust was slurried in closed steel 800-gallon-to 1040-gallon capacity tanks (pots) with secondary containment; two pots at each of 4 furnaces. Operated from the 1950s. Secondary containment upgrades of slurry lines to V-3700 and V-3600 completed in 1999 pursuant to FMC Pocatello RCRA Consent Decree (1999) Attachment A POG upgrades. Pots used in operation of the NOSAP precipitator slurry treatment process. Pots taken out of service in 2001. Residual wastes removed in 2001. All furnace pots have been decontaminated and removed.	Low. Potential spills or leaks from pots (when in operation) would have been contained by concrete floor of Furnace Building prior to RCRA POG Upgrades.
1	77	Phosphorus Loading Dock, Anderson Scrubber Blowdown Sump, and North Solid Tank	Anderson Scrubber Blowdown Sump converted from a <90-day GAA to process vessel as part of FMC Pocatello RCRA Consent Decree (1999) Attachment A POG upgrades. North Solids tank (operated as a <90-day GAA) was removed in 1999 pursuant to installation of Tank V-3800 under the FMC Pocatello RCRA Consent Decree (1999) Attachment A POG upgrades.	Low, prior to RCRA POG Upgrades.

(table continues)

Table 2-2 (Continued)

RU	SWMU No.	SWMU Name	SWMU Description	Potential for Soil Impact from SWMU*
1	78	Former Washdown Collection Sumps - Furnace Building Area	Seven concrete sumps (flow-through process tanks) and connecting launders in Furnace Building used to collect phossy wastewater generated from furnace washdown. Sumps had pumps to transfer wastewater to Tank V-3600 in southeast corner of building. Newly operational in 1991. If one sump should overflow due to pump problems, wastewater would drain into an adjacent sump. Operators routinely monitored sump operation. Per FMC Pocatello RCRA Consent Decree (1999) Attachment A POG secondary containment upgrades implemented in 1999. Sumps taken out of service in 2001. Residual wastes removed and unit decontaminated in 2002.	Moderate, prior to RCRA POG Upgrades.
1	79	Former Northeast Collection Sump - Furnace Building Area	6X6X7-foot stainless steel-lined sump used for collection of phossy wastewater, which is pumped to Tank V-3600. Located in northeast area of the Furnace Building area. Operational since 1979. Wastewater is pumped to the phosphorus loading dock for further use in the process. If the sump were to overflow, wastewater would flow to one of the furnace washdown sumps. Per FMC Pocatello RCRA Consent Decree (1999) Attachment A POG secondary containment upgrades implemented in 1999. Sump taken out of service in 2001. Residual wastes removed and unit decontaminated in 2002.	Moderate, prior to RCRA POG Upgrades.
1	80	Former Southeast Collection Sump - Furnace Building Area	10,000-gallon capacity sump used for collection of nonhazardous storm water runoff and tapping floor washwater from east side of No. 1 Furnace, which is pumped to Tank V-3600. Prior to 1992, used for collection of phossy wastewater. Secondary containment pad and delumper added to SE sump in 1999 as part of POG upgrades per FMC Pocatello RCRA Consent Decree (1999) Attachment A. Located in southeast area of the furnace building area. Earliest operation unknown. Sump taken out of service in 2001. Residual wastes removed and unit decontaminated in 2002.	Moderate, prior to RCRA POG Upgrades.

(table continues)

Table 2-2 (Continued)

RU	SWMU No.	SWMU Name	SWMU Description	Potential for Soil Impact from SWMU*
1	81	Former Furnace Washdown Collection Tank (V-3600)	Stainless steel tank (V-3600) with 46,000-gallon capacity in southeast corner of the Furnace Building area. Replaced the slag pit collection sump in 1991. Tank is equipped with level controls, alarms, and secondary containment. Per FMC Pocatello RCRA Consent Decree (1999) Attachment A POG piping upgrades implemented in 1999. Unit taken out of service in 2001. Residual wastes removed and unit decontaminated in 2002.	Low.
1	82	Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)	Phossy wastewater and precipitator slurry waste pumped from points of generation at Furnace Building area and phosphorus loading dock to various WMUs via piping system. Clean-out taps located in various locations where pipelines bend or change direction. Earliest operation unknown. Piping upgraded to welded joints and located above-grade in 12/97.	Moderate, prior to upgrade to welded joints and above-grade placement.
1	86	Former V-3700 Tank and Associated Piping	7,000-gallon stainless steel tank in southwest corner of the Furnace Building. Tank is equipped with level controls, alarms, and secondary containment pursuant to RCRA 40 CFR 265 Subpart J standards. Used as part of NOSAP process to treat precipitator slurry pursuant to RCRA Pond Management Plan. Unit taken out of service in 2001. Residual wastes removed and unit decontaminated in 2001.	Tank placed into service subsequent to EPA assessment. Unit designed, operated and closed in accordance with RCRA GAA standards for tank systems.
1	90	V-3800 Tank and Associated Piping	90-day generator accumulation area at the Phos Dock. Installed in 1999 as replacement for North Solids Tank and Anderson Scrubber Blowdown Sump (SWMU # 77) under FMC Pocatello RCRA Consent Decree (1999) Attachment A POG upgrades. Tank is equipped with level controls, alarms, and secondary containment pursuant to 40 CFR 265 Subpart J standards.	Tank placed into service subsequent to EPA assessment. Unit designed, operated and closed in accordance with RCRA GAA standards for tank systems.
1	91	Former NOSAP Intercept Tank (Tank T-8010)	5,000-gallon stainless steel tank installed in 2000 to treat off-spec NOSAP slurry from Tank V-3700 to NOSAP standards. Tank was equipped with level controls, alarms, and secondary containment pursuant to 40 CFR 264 Subpart J standards. Unit taken out of service in 2001. Residual wastes removed and unit decontaminated in 2001.	Tank placed into service subsequent to EPA assessment. Unit designed, operated and closed in accordance with RCRA GAA standards for tank systems.

(table continues)

Table 2-2 (Continued)

RU	SWMU No.	SWMU Name	SWMU Description	Potential for Soil Impact from SWMU*
1	104	#3 P4 Sump	An approximately 15,250 gallon concrete sump that collected the elemental phosphorus product stream from the #3 Furnace condenser prior to refinement at the Phos Dock. An 11,000-gallon capacity stainless steel tank was installed within the sump in 1999 after excavation beneath the floor of the Furnace Building revealed that the sump had been leaking P4 into adjacent soils. Operation of the concrete sump began circa 1952 and ended in 1999.	SWMU identified subsequent to EPA assessment. Observed impact.
2	102	Former Slag Pit (prior to conversion to Slag Ladling)	SWMU 102 is an area of approximately 112,000 ft^2 adjacent to the south side of the Furnace Building in which slag from furnace tapping was cooled before removal to the Slag Pile. Phossy water spills within Furnace Building historically drained into slag pit. Operation began in 1949 and ended with the conversion to slag ladling in October 2000. Approximately 12,000 yd^3 of material were removed from the slag pit to a maximum depth of approximately 4 feet in 2000 to facilitate installation of the slag ladling system.	Potential not rated by EPA. Unlined condition suggests potential for soil impact.
3	92	P4 Maintenance Cleaning Facility	SWMU 92 is an approximately 800 sq. ft facility constructed in 1999 with secondary containment to decontaminate and prepare equipment for repairs, recycle, or discard. SWMU 92 is designed and operated as a RCRA 90-Day GAA (Containment Building Standards).	Unit placed into service subsequent to EPA assessment. Unit designed and operated in accordance with RCRA GAA standards for containment buildings.
4	99	Drum Storage Area at the Training Center	SWMU 99 is a container storage area that was placed into service in 2002 to support facility decommissioning. SWMU 99 is designed and operated as a RCRA 90-Day GAA (Container Storage Standards) and will be closed by waste removal and equipment decontamination.	Unit placed into service subsequent to EPA assessment. Unit designed and operated in accordance with RCRA GAA standards for container storage areas.
6	63	Former Long-Term Elemental Phosphorus Storage Tanks	SWMU 63 is the site of twelve former underground tanks used to store elemental phosphorus. These tanks were removed in 1994 and 1998.	Potential not rated by EPA.
8	67	Flare Pit for Calciner Carbon Monoxide	SWMU 67 was a flare pit associated with the calcining process; SWMU 67 was removed during construction of Excess Carbon Monoxide Combustor in 2000. SWMU 103 was a flare pit used to combust excess carbon monoxide gas stream from furnace operation during bypass of Excess CO Combustor.	Moderate to air (when operational). Soils beneath former flare pit were excavated during construction of Excess CO Combustor.

(table continues)

Table 2-2 (Continued)

RU	SWMU No.	SWMU Name	SWMU Description	Potential for Soil Impact from SWMU*
8	103	New Horizontal Flare Pit	SWMU 103 operated between January 2000 and December 2001. The interior base and walls of SWMU 103 were lined with slag to absorb heat; this slag layer overlies a liner system designed to RCRA MTR standards.	Unit placed into service subsequent to EPA assessment. Unit lined per RCRA MTR standards.
19	na	Railcars under the Slag Pile	As noted in Section 3.2 of the SPM (FMC 2004), EPA received public input that railcars, potentially containing P4, were present within or beneath the Slag Pile. Review of historic photographs indicates that 17 railcars were present in or before 1965 at an area that is now the thickness portion of the Slag Pile. Discussion with a former employee indicates that the railcars contain sludge from the manufacture of P4.Based on other plant operational data, sludge might contain 15% to 95% P4. Pending further research into this issue, the updated CSM will assume that railcars containing sludge from the manufacture of P4 are present beneath a portion of the Slag Pile, and that these railcars represent a potential source of P4.	Presence of railcars recognized subsequent to EPA assessment.
Mult-iple	64	Phosphorus Waste Pipeline Cleanout Areas and Intervals	SWMU 64 corresponds to cleanout taps located along the route of the pipeline used to transport phosphorus-containing water pumped from furnace washdown collection tank and phosphorus-loading dock to Ponds 11S, 12S, 13S, 14S.	Potential not rated by EPA.
"	65	Precipitator Slurry Pipeline Cleanout Areas and Intervals	SWMU 65 corresponds to cleanout taps located along the route of the pipeline used to transport precipitator slurry pumped from Furnace Building via pipelines to Pond 8E.	Potential not rated by EPA.
"	82	Facility-Wide Wastewater Piping System (Phossy Water and Precipitator Slurry)	SWMU 82 corresponds to the pipeline system used to transport phossy wastewater and precipitator slurry waste pumped from points of generation at Furnace Building area and phosphorus loading dock to various WMUs and associated clean-out taps where pipelines bend or change direction (date of earliest operation unknown; piping upgraded to welded joints and located above-grade in 12/97).	Moderate, prior to upgrade to welded joints and above-grade placement.

* Release potential rating from EPA's 1994 RFA Report (EPA, 1994b).

Table 2-3
Constituents of Potential Concern Evaluated in EMF ROD

Chemical	Soil	Groundwater	Air[B]
Aluminum			X
Antimony	X		
Arsenic	X	X	X
Beryllium	X	X	
Boron	X	X	
Cadmium	X		X
Chromium			X
Crystalline Quartz			X
Fluoride	X	X	X
Gross alpha	X[A]	X[A]	
Gross beta	X[A]	X[A]	
Lead-210	X		X
Manganese	X	X	
Mercury	X	X	
Nickel	X	X	X
Nitrate		X	
Phosphorus			X
PM10			X
Polonium-210	X	[A]	X
Potassium-40	X	[A]	
Radium-226	[A]	X	
Radon	[A, C]		
Selenium	X	X	X
Silver	X		X
Tetrachloroethene		X	
Thallium	X		
Thorium-230	[A]	[A]	X
Trichloroethene		X	
Uranium-234		[A]	
Uranium-238	X	[A]	X
Vanadium	X	X	
Zinc	X	X	

[A] Individual radionuclides potentially responsible for elevated gross alpha and gross beta levels are also COPCs.

[B] Chemicals that exceeded background concentrations and lacked inhalation toxicity criteria (reference concentrations and inhalation unit risks) were retained as COPCs.

[C] Retained as a COPC mainly for evaluation of potential radon infiltration into buildings under alternate future commercial or industrial uses of the site.

Source: Table 2-3 is a reproduction of Table 14 of the EMF Site ROD (EPA 1998).

Table 2-4
Response to Agency Comments on October 2003 Draft Outline of Updated CSM

	Agency Comment	Response
Comment Set #1	1.All of the RU clusters, identified in Table 3.1 of the scoping memo do not appear to be included in the model. It is unclear if an updated CSM will be forthcoming, or if that October document is still applicable. Therefore, comments will be directed at the October document even though an updated model may be in preparation.	The figure distributed at the October 2003 meeting to illustrate the updated Conceptual Site Model was designed to fit on a single page to provide an overview of the CSM. Space was not available on this figure for a complete listing of all 107 SWMUs. The figure has been revised to include the various RUs, and the narrative explanation of the updated CSM provides additional information on the components of each RU.
	2 The P4 production, storage, and handling areas are represented as having only soil and air exposure media. It would seem appropriate that at a minimum the groundwater exposure path be identified and characterized. P4 is currently being sampled down gradient of the furnace building, and it has been detected at low concentrations.	Agreed. Groundwater has been added as a potential exposure medium for the P4 Production, Handling, and Storage Area (RU #1) in the updated CSM.
	3. Another issue that is not totally clear in the CSM is how deposition as a potential release mechanism will be investigated. At this time, deposition is described as resulting from former emissions from the FMC and Simplot facilities. This general and nebulous description does not adequately define how the final RU clusters and SWMUs will individually or collectively contribute to human health risk.	The updated CSM identifies soil impacted from former emissions from FMC and Simplot as a secondary potential source.
	4. Also, using slag as an example, if for some unforeseen circumstance slag crushing and use as a road aggregate is resumed the only potential release mechanism would not be use of byproduct as fill, and therefore would introduce the exposure pathway of air. After incorporation of the additional SWMUs, contained in Table 3-1, it is doubtful that this would be the only example where all of the potential release mechanisms and resulting exposure media have not been completely identified.	The updated CSM was revised to show fugitive emissions from slag during potential construction excavations and from vehicle traffic on roadways within FMC Plant OU that are graded with slag as potential secondary release mechanisms. Resumption of slag crushing for use as construction aggregate is speculative. Emissions associated with slag crushing and use will be evaluated in the SFS in the event that excavation and reuse of slag from the Slag Pile is identified as a potential remedial action alternative.
	5. In general, though, it is very difficult to evaluate the current CSM due to the missing SWMUs.	See above and in response to Comment #2 in Comment Set #2.
Comment Set #2	1. In general, the CSM does not appear to take into account the proposed land use change that will likely occur as a result of the facility's closure in 2001. The record of decision (ROD) proposed remedial actions that were protective under the operating scenario at the time of signing, but these actions may not be protective under future land use scenarios. Many hazardous constituents believed to exist in former operations areas and fill areas were not assessed during the remedial investigation (RI). In addition, material from these areas, that have not been characterized, may be excavated and relocated in a future construction scenario. This could expose construction workers and future site workers to unacceptable risks due to possible inhalation, ingestion, dermal contact, and external exposure to radiation. For example, fill material that was used for road construction within the facility likely contained precipitator dust. This material was not fully characterized during previous investigations. Should this material be excavated, relocated, and recycled as part of redevelopment, unacceptable risks could be posed to construction workers and future site workers or land users. The CSM must be changed to account for chemical and radiological constituents, sources, pathways, exposure routes and receptors in a future land use scenario. Exposure routes that should be included are ingestion, dermal contact, inhalation and external radiation exposure.	The comment implies that risks attributable to exposure to site sources/soils under a future, non-FMC, operating scenario have never been characterized. EPA's 1996 Human Health Baseline Risk Assessment (HHBRA) for the FMC Operable Unit evaluated two future case exposure scenarios: (1) exposure of FMC workers and contractors while FMC continued to operate the facility and impose administrative controls, and (2) exposure of site workers under a generic commercial/industrial land use scenario. For example, the HHBRA calculated risks from exposure to the Slag Pile under both scenarios. In the 1998 ROD, EPA did not select remedial actions for those portions of the plant area that would remain in operation, such as the Slag Pile, after finding that the administrative controls imposed under FMC's ongoing plant management program were acceptable in managing risks at those portions of the plant. FMC agrees that the updated CSM should identify potential exposure pathways for construction workers and future site workers. The figure illustrating the updated CSM identifies ingestion, dermal contact, external radiation exposure, inhalation to fugitive emissions, and fire and/or smoke in the case of P4, as potential exposure pathways within the FMC Plant OU associated with future construction workers and site workers. During the EMF RI characterization of potential source areas and roadways, soil samples were generally collected beneath byproduct fill (e.g., slag), in order to evaluate the vertical distribution of site-related constituents. Byproducts and waste materials (e.g., slag, ferrophos, precipitator slurry) and ore were separately characterized. EPA CSM #1 & 3 suggest that this practice has resulted in an absence of data needed to characterize surficial soils within the FMC Plant OU This is an inappropriate conclusion. Soil boring logs from the previous investigation program record the presence and thickness of byproduct material used as fill, and the characterization data for byproduct material provide information on constituent levels that can be used for screening comparisons with RBCs. The EMF RI Report (page 4.2-130) noted one instance where precipitator slurry dusts are associated with roadbed material.

(table continues)

Table 2-4 (Continued)

	Agency Comment	Response
Comment Set #2	2. Not all of the solid waste management unit (SWMU) areas are defined in the CSM and none of the "SWMU clusters" are defined. The CSM should be refined to include these. SWMUs that were not identified include: [see list below] The CSM should account for all known SWMUs at the facility and each of the proposed SWMU clusters.	The updated CSM (Table 2-1) provides a detailed cross-reference of remediation units and SWMUs. The SWMUs listed in the comment are associated with the following Remediation Units:
	• Ferrophos Storage Pile	• RU 22b
	• Surface Roads, Bannock Paving Company	• RU 20
	• Old Pond 7S Tree Lined Area	• RU 22b
	• Chemical Laboratory Seepage Pit	• RU 5
	• Transformer Salvage Area	• RU 12
	• PCB Storage Shed	• RU 12
	• Waste Oil Storage Area	• RU 22b
	• Disposal Area Behind the Laboratory	• RU 5
	• Area West of the Mobile Shop	• RU 12
	• High Pressure Steam Cleaning Station	• RU 12.
	• Old Landfill	• RU 19
	• New Landfill	• RU 18
	• Roadway Landfill	• RU 17
	• Baghouse Reclaim Dust Pile	• RU 15
	• Three Kiln Scrubber Ponds	• RU 8
	• Kiln Scrubber Overflow Pond	• RU 9
	• Secondary Condenser and Old Fluid Bed Drier Unit	• RU 1
	• Flare Pit for Calciner Carbon Monoxide	• RU 8
	• SWMUs within the Furnace Building and Process Area	• RU 1
	• Surface Roads	• Each RU includes coincident road segments; will designate RU 23 for road segments not otherwise included in other RUs.
	• Septic Tank Areas	• RU 4
	• Facility-wide wastewater piping system and sewers	• RUs 1, 12, 13, 22b
	• Areas containing construction fill	• Each RU includes coincident construction fill, which is not defined as a SWMU

(table continues)

Table 2-4 (Continued)

	Agency Comment	Response
Comment Set #2	3. Potential release mechanisms such as "byproduct as fill" and "surficial soil contamination from residuals" should be included as potential release mechanisms for all potential sources in the diagram, including "Areas with sustained hydraulic head" For example, during the RI samples were collected in the areas west of the mobile shop. This area is suspected of being over former Ponds 0S and 00S, however, the exact locations of these ponds is not known. Pond 0S and 00S are listed under "Areas with Sustained Hydraulic Head". Sample analysis revealed that precipitator dust fill likely contaminates the soil near the surface. Elevated levels of gross alpha were identified in samples collected near the surface. The existing CSM only identifies infiltration/percolation as a potential primary release mechanism. Only groundwater, surface water and sediment are identified as an exposure medium. Exposure pathways should include soil ingestion, inhalation, dermal contact and external radiation exposure for current and future site workers. Additionally, it is not clear what purpose it serves to delineate the SWMUs into areas that are delineated by the presence or absence of sustained hydraulic head.	The CSM illustration figure identifies "use of byproduct as fill", "contact", "process spills (P4)", and "infiltration/percolation" as potential primary release mechanisms for sources associated with such release mechanisms. Construction fill may be present in association with some of the sources listed under "Areas Without Sustained Hydraulic Head" (e.g., use of slag in roadbeds). It would seem redundant to list byproduct as fill, etc. as noted in the comment Evaluation of existing site characterization data in the RI Update Report will include consideration of the presence of byproduct material at each RU. As evident from inspection of recent air photos of the FMC plant area, slag is present over much of the surface area. In the case of sources that operated with a sustained hydraulic head, direct contact, erosion, and storm water runoff have been added to the CSM to acknowledge the potential for exposure to uncapped sources such as the former unlined ponds cited in the comment.
	4. Potential release of contaminants to groundwater from items allegedly buried beneath the slag pile should be addressed. For example, railcars containing high levels of radionuclide-contaminated waste could leak and contaminate groundwater to the extent that it could pose unacceptable risks under future land use scenarios.	The presence of railcars within the Slag Pile will be evaluated in response to the public comments, as noted in the Scoping and Planning Memorandum. Consideration of potential groundwater impact attributable to railcar contents will be based on the results of this initial evaluation. The RI Update Report documents findings
	5. Utilities such as wastewater and sewer pipelines should be addressed in the CSM. These utilities may be contaminated and pose a threat to future workers at the site.	Phossy waste and precipitator slurry pipelines are already included within the scope of the SRI/SFS process, as noted earlier. The storm drain from the area north of the Furnace Building, within RU 3, will be included in the SRI/SFS scope. The SRI will investigate the potential for releases from this underground utility.
	6. The CSM should be amended to include air as a potential secondary source. Phosphorous and other volatilized compounds may be present at times.	Air is identified as an exposure medium associated with P4 production, Storage, and Handling Areas. It is unclear how air can be classified as a source.
	7. The CSM should be amended to include deposition as a potential secondary release mechanism.	Deposition (fallout) associated with former emissions from the FMC and Simplot facilities was determined by the EMF RI to have impacted surface soils. Given the substantial reductions in particulate emissions from FMC sources subsequent to the EMF RI and the cessation of FMC's manufacturing operations, deposition onto surface soils is no longer as ongoing release mechanism. The previously impacted surface soils are viewed as <u>secondary sources</u>. Fugitive dust emissions from these soils (due to vehicle traffic or excavation) are viewed as a secondary release mechanism.